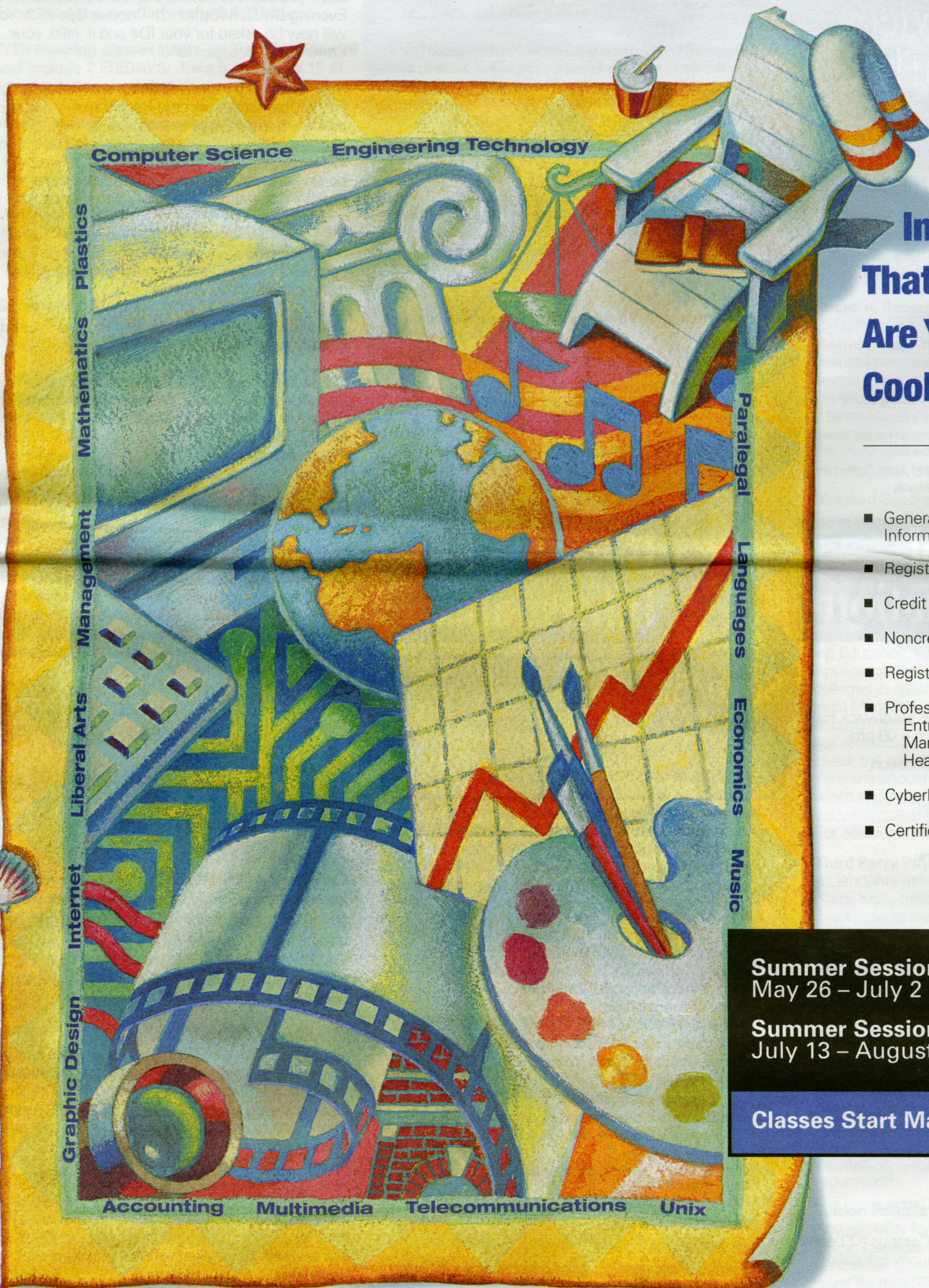


Summer 1998

Undergraduate and Graduate Courses

Day and Evenings



**In an Economy
That is Heating Up,
Are Your Skills
Cooling Down?**

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Summer Session I
May 26 – July 2

Summer Session II
July 13 – August 20

Classes Start May 26, 1998

Register by phone, mail, or in person.
MasterCard and VISA accepted.

University of Massachusetts Lowell
University College/Division of Continuing Education
One University Avenue
Lowell, MA 01854-2881
(978) 934-2480

The University uses multiple mailing lists. If you receive a duplicate copy, please share it with a friend.

Non-Profit Org.
U.S. Postage
PAID
UMass Lowell

General Information

In an Economy That is Heating Up, Are Your Skills Cooling Down?

The Division of Continuing Education offers 27 short-term evening certificate programs that will keep your knowledge on the cutting edge of this hot economy. These certificate programs provide an opportunity for students to obtain marketable skills within a concentrated frame time.

This summer take advantage of the many courses and programs available at UMass Lowell to advance your career.

In addition, if a busy schedule or business travel keeps you from taking a class on campus, consider taking a

course online with UMass Lowell's CyberEd program. (See page 17.)

This summer you can take advantage of our programs to study new developments in your field, complete your degree, change careers, or pursue new interests.

We look forward to seeing you this summer!

For more information about our courses and programs, visit us at our World Wide Web site! <http://www.uml.edu/DCE>.



Robin Desmond
Financial Manager

The University of Massachusetts Lowell/Division of Continuing Education offers several options for financing your education, including a payment plan through Academic Management Services (AMS) which allows students to spread out their tuition payments over a four month period. Continuing Education students are also eligible to apply for TERI loans, another option that provides an affordable solution to meeting educational costs.



Elizabeth Therrien
Office Manager

The registration office of Continuing Education is constantly striving to improve the services we provide for our students. The office processes all registrations for credit and non-credit courses. The staff also processes all drop/add requests, refund applications, transcript requests, grades and grade changes. For your convenience the office is generally open from 8:30 a.m. to 8:30 p.m. Monday through Thursday and 8:30 a.m. to 5:00 p.m. on Friday, unless otherwise specified.

We invite you to check out our new voice message system which will make it easier for you to request transcripts, obtain directions to the University, or check on cancellations due to inclement weather.

Phone-In Registration using the Voice Response System, (Credit Courses Only): Dial (978) 934-2050/2049.

Students who are presently enrolled at the University of Massachusetts Lowell, Division of Continuing Education and who have a Continuing Education PIN# (students registered during Fall and Spring), may now register for summer classes through the touchtone telephone registration system. This system is available during the following times: Monday-Thursday: 6:00 am-11:00 pm; Friday: 6:00 am-9:00 pm

To access the system, dial (978) 934-2050/934-2049.

The Voice Response System will answer the call and ask if you want to access Day School (Option 1) or Evening Division (Option 2). Choose Option 2. You will now be asked for your ID# and if valid, your Continuing Education PIN#.

Hold flags will be checked and if none are found, you will be led through the Registration/Add/Drop process by a series of menus and options.

When you finish selecting your courses, you will be asked to pay by credit card and told the amount owed. Registration will be completed upon payment.

If you hang up anytime during the call or do not complete the payment process, all of the ADD transactions will be undone.

If you experience any problems with this system, please report them to (978) 934-2588.

Office Walk-In Registration at the Office of Enrollment Services/Continuing Education, Southwick Hall, North Campus

Please refer to the Office of Enrollment Services/Continuing Education hours for walk-in registration. Payment must be made at the time of registration. Payment after 4:00 pm must be made by check, money order, VISA, or MasterCard. Students will receive class confirmation, room assignment, receipt, and ID at the time they register.

Late Registration

In-person late registration will take place in the Office of Enrollment Services/Continuing Education. See page 3 for late registration dates. **Note: There is an additional \$50.00 fee for late registration.**

Due to the unique nature of the Community Education Noncredit Courses, noncredit registrations cannot be accepted after the first class meeting.

Final Drop/Add Period

See the appropriate academic calendar. Drop/adds can be processed in the Office of Enrollment Services/Continuing Education, Southwick Hall, North Campus.

Last Week to Withdraw with "W" Notation:

See the appropriate academic calendar for the last day to withdraw. Students withdrawing from any class must officially notify the Office of Continuing Education on forms provided by the Office. Verbal messages to faculty or staff do not constitute official notification.

Identification Card

Students registering in person will receive an ID card during the office walk-in registration and general registration. Students who register by phone or mail will receive their ID by return mail with their letter of confirmation.

Students with Disabilities

A student with a disability who needs special arrangements should contact Susan Desmond at (978) 934-2465 early in the registration process. Special advising, registration assistance, preferential scheduling, and alternative examination procedures are available. Students must qualify for handicapped parking stickers. Special parking is also available on a temporary basis.

Need Directions?

Call (978) 934-2480 for information on how to get to our campus.

Spotlight on Student Services Meet the Staff



Susan Desmond
Coordinator of Student Services
Division of Continuing Education

The Division of Continuing Education offers many student services to help students reach their education goals, including:

- Advising by general advisors, faculty advisors and peer advisors (by appointment, walk-in, phone-in, e-mail)
- Evaluation of transfer credit
- Tutoring center
- Special seminars in Time Management, Listening and Note Taking and New Student Orientation
- Open houses
- Scholarships designed specially for Continuing Education Students
- Career Development Workshop with tips on resume development, cover letter writing, and interview skills
- Coordinating the recognition activities of Alpha Sigma Lambda Honor Society, including scholarship awards

General Information

Office Hours:

University College Advising Center, Southwick Hall, Room 305, Monday-Friday: 8:30 am-5:00 pm

Enrollment Services/Continuing Education, Southwick Hall, Room 223, Monday-Thursday: 8:30 am-8:30 pm Friday: 8:30 am-5:00 pm

Holiday Hours and Special Hours:

May 25: Memorial Day observed
June 7: Commencement
July 4: University Closed

The week of July 6 through July 10 the Office of Enrollment Services/Continuing Education will be open from 8:30 am-5:00 pm

Phone Directory

(978) 934-2623 Bookstore — North Campus
(978) 934-6908 Bookstore — South Campus
(978) 934-2480 Continuing Education Main Number
(978) 934-3087 Continuing Education Fax Number
(978) 934-2474 Continuing Education Advising Center
(978) 934-2588 Continuing Education Enrollment Services
(978) 934-3205 Library — North Campus (Alumni/Lydon)
(978) 934-4550 Library — South Campus (O'Leary)
(978) 934-4996 Noncredit Community Education Courses
(978) 934-2700 Phone-In Registration — Operator Assisted
(978) 934-2050 Phone-In Registration — Automated
(978) 934-4000 UMass Lowell Main Number
(978) 934-2121 Weather Cancellations

Registration Information

Save \$50!

Get a head start and register early to avoid the late fee.

Although we cannot guarantee an opening in any class, your chances for being enrolled in the course of your choice are better when you register early.

We encourage you to mail-in or phone-in your registration in sufficient time to guarantee the class of your choice and to receive your classroom confirmation. See Academic Calendars on page 3 for appropriate registration deadlines.

Mail-In Registration:

1. Fill out the registration form and return it postmarked no later than the scheduled deadline.
2. Mail to: University of Massachusetts Lowell Enrollment Services/Continuing Education One University Avenue Lowell, MA 01854-2881
3. Payment must be made with the registration form, either by check, money order, VISA, or MasterCard. Make checks payable to: University of Massachusetts Lowell.
4. Students will receive class confirmation, room assignment, receipt and ID by mail before the first class meeting.

Fax-In Registration:

Fill out the registration form and fax it to (978) 934-3087 no later than the scheduled deadline. Be sure to include your VISA or MasterCard number.

Phone-In Registration with an on-line operator:

1. Payment can be made by VISA or MasterCard only.
2. Call (978) 934-2700. Please refer to the Office of Enrollment Services/Continuing Education hours for phone-in registration times. The registration staff may take only registration information. If you have any questions concerning courses and academic programs, please call (978) 934-2480 or (978) 934-2474. Check page 3 for phone-in registration deadlines.

Academic Calendar and Registration Information

Summer Session I May 26 – July 2, 1998

Day classes begin on Tuesday, May 26.

M/W Evening classes begin on Wednesday, May 27 and include 3 FRIDAYS: May 29, June 12, and June 26 at the regularly scheduled hours.

T/Th Evening classes begin on Tuesday, May 26 and include 2 FRIDAYS: June 5 and June 19 at the regularly scheduled hours.

We encourage you to mail-in, phone-in, or fax-in your registration.

May 25: Memorial Day observed.

Mail-In Registration: March 30-May 19
Phone-In Registration: March 30-May 19
Fax-In Registration: March 30-May 19
Walk-In Registration: March 30-May 19

General Registration: May 18 & 19

9:00 am-12:00 Noon and 5:00 pm-7:30 pm in the Office of Enrollment Services/Continuing Education

Late Registration: Begins May 20

Note: There is an additional \$50.00 fee for late registration. No exceptions.

Last Day to Add a Lab:

Day Classes: May 27

Last Day for Partial Refund:

(Before the 3rd class meeting)

Day Classes: May 28

M/W Evening Classes: June 1

T/Th Evening Classes: June 2

Last Day to Drop/Add Course:

Day Classes: June 1 (3-credit courses);

May 29 (4-credit courses)

(Before the 4th class meeting)

M/W Evening Classes: June 1

(Before the 3rd class meeting)

T/Th Evening Classes: June 2

(Before the 3rd class meeting)

Last Day to Withdraw with "W" Notation:

Day Classes: June 17 for a 3-credit course;

June 12 for a 4-credit course

M/W Evening Classes: June 22

(Before the 10th class meeting)

T/Th Evening Classes: June 19

(Before the 10th class meeting)

Final Examinations:

Day Classes: July 1 for a 3-credit course;

July 2 for a 4-credit course

M/W Evening Classes: Wednesday, July 1

T/Th Evening Classes: Thursday, July 2

NOTE:

M/W evening courses meet twice a week plus 3 Fridays: May 29, June 12, and June 26.

T/Th evening courses meet twice a week plus 2 Fridays: June 5 and June 19.

This newspaper is printed at no cost to the Commonwealth of Massachusetts. The University of Massachusetts Lowell is an Equal Opportunity/Affirmative Action University and does not discriminate in employment or access to programs or services on the basis of race, sex, sexual orientation, color, national origin, religion, handicap, or veteran's status and is in compliance with Title IX of the Education Amendments of 1972 and Section 504 of the Rehabilitation Act of 1973, and the Americans With Disabilities Act, 1990. Any inquiries and/or grievances may be referred to the Affirmative Action Officer, the Title IX Coordinator, the Disabilities Coordinator and/or to the Director, Office for Civil Rights, U.S. Department of Health and Human Services, Washington, D.C.

Every effort has been made to ensure the accuracy of the information presented in this bulletin. However, the Division of Continuing Education reserves the right to implement new rules and regulations and to make changes of any nature in its program, calendar, locations, tuition, and fees. Whenever possible, appropriate notice of such changes will be given before they become effective.

In registering for courses, each student assumes full responsibility for knowledge of and compliance with the definitions, regulations, and procedures for the University as set forth in the appropriate publications and bulletins.

Summer Session II July 13 – August 20, 1998

Day classes begin on July 13.

M/W Evening Classes begin on July 13 and include 2 FRIDAYS: July 17 and July 31 at the regularly scheduled hours.

T/Th Evening classes begin on July 14 and include 2 FRIDAYS: July 24 and August 7 at the regularly scheduled hours.

We encourage you to mail-in, phone-in, or fax-in your registration to guarantee the class of your choice and the receipt of your classroom confirmation.

Mail-In Registration: March 30-July 7
Phone-In Registration: March 30-July 7
Fax-In Registration: March 30-July 7
Walk-In Registration: March 30-July 7

Late Registration: Begins July 8

Week of July 6 through July 10 the office is open from 8:30 am to 5:00 pm.

Note: There is an additional \$50.00 fee for late registration. No exceptions.

Last Day to Add a Lab:

Day Classes: July 14

Last Day for Partial Refund:

(Before the 3rd class meeting)

Day Classes: July 15

M/W Evening Classes: July 17

T/Th Evening Classes: July 21

Last Day to Drop/Add Course:

Day Classes: July 16

(Before the 4th class meeting)

M/W Evening Classes: July 17

(Before the 3rd class meeting)

T/Th Evening Classes: July 21

(Before the 3rd class meeting)

Last day to Withdraw with "W" Notation:

Day Classes: August 3 for a 3-credit course;

July 30 for a 4-credit course

(Before the 10th class meeting)

M/W Evening Classes: August 5

(Before the 10th class meeting)

T/Th Evening Classes: August 7

(Before the 10th class meeting)

Final Examinations:

Day Classes: August 18 for a 3-credit course;

August 19 for a 4-credit course

M/W Evening Classes: Wed., August 19 at 7 pm

T/Th Evening Classes: Thurs., August 20 at 7 pm

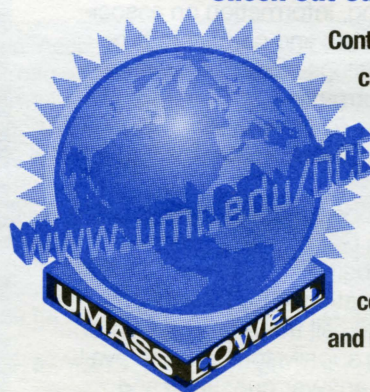
NOTE:

M/W evening courses meet twice a week plus 2 Fridays: July 17 and July 31.

T/Th evening courses meet twice a week plus 2 Fridays: July 26 and August 7.

Check Out Our World Wide Web Site!

Continuing Education information can also be retrieved over the World Wide Web. Look for us at "<http://www.uml.edu/DCE>" for additional information on current course schedules, course descriptions, degree or certificate program information, and much more!



Financial Information

Save \$50!

Get a head start and register early to avoid the late fee.

Although we cannot guarantee an opening in any class, your chances for being enrolled in the course of your choice are better when you register early.

Tuition is priced on the basis of credit hour unless contact hour is different. Tuition is then based on the listed contact hour.

Tuition and Fee Information

Undergraduate Tuition	\$160.00
(per credit/contact hour)	
Undergraduate Audit	\$160.00
(per credit/contact hour)	

Late Registration Fee

For Summer I — Beginning May 20	\$50.00
For Summer II — Beginning July 8	\$50.00
Graduate tuition (per credit/contact hour)	\$210.00

Students who have checks returned due to insufficient funds will be charged an additional \$30.00 for the processing of the registration.

Overdue Accounts

Students will be permitted to attend class and to utilize facilities only after they have cleared all their financial obligations to the University. In addition, student transcripts and diplomas will not be released unless all indebtedness has been discharged. Should it be necessary to utilize the services of a collection agency or attorney for an overdue student account, the student will be liable for any and all legal fees, commissions, and associated service charges.

Directed Studies

Directed studies and Practicums are considered Special Programs, and as such, tuition remission and certificates of eligibility cannot be accepted.

Veterans' Information

Veterans must be matriculated in an undergraduate degree program and have all appropriate paperwork on file in the Office of Enrollment Services/ Continuing Education, including a DD214, a signed Admission Application form, and official transcripts from other colleges in order to receive VA benefits. Waivers for legal Massachusetts residents (residency must be documented) cover 100% cost of tuition and are not retroactive. Veterans requesting benefits must check the appropriate line on the registration form. Veterans should use the mail-in or walk-in options when registering and should provide all necessary documentation (no phone-in or fax information). For additional information, call (978) 934-2430.

Third Party Payment

All students using company direct payment, military plans, state tuition waivers, or veterans' waivers must include the appropriate forms or authorizing letters with their registration, or have them on file. No tuition refund is awarded for late submission of eligibility form. Students receiving company reimbursement must prepay their own tuition. For additional information, call (978) 934-2479.

Senior Citizens

Senior citizens (60 years or older) may attend classes in Continuing Education credit programs tuition-free provided that there are sufficient tuition paying students enrolled to bear the cost of instruction and provided there is space available. Waivers are not retroactive and do not cover cost of materials. Proof of birthdate must be provided at the time of registration.

Tuition Refund Policy for Credit Courses

Any eligibility for tuition refund is based on the academic calendar, not class attendance. When a student drops a course, instructional and other costs must be met. Therefore, refunds are prorated according to the following schedule:

Withdrawal before first class meeting	100%
Before the second class meeting	80%
Before the third class meeting	40%
After third class meeting	No refund

All fees will be refunded if Continuing Education is responsible for cancellations.

General Information

Students withdrawing from any class must officially notify the Office of Enrollment Services/Continuing Education on forms provided by the Office. Verbal messages to faculty or staff do not constitute official notification.

Tuition Refund Policy for students receiving Title IV Financial Aid and enrolled in a degree or specifically designated certificate program

Refunds for Title IV financial aid recipients will be processed according to federal guidelines and institutional policy. Please call the Financial Aid Office at (978) 934-4220 if you have any questions.

Tuition Refund Policy for Noncredit Courses

Participants who withdraw before the first class meeting will receive the total amount paid. Participants who withdraw following the first class meeting will receive a 40% refund. No refunds are given for withdrawal after the second class meeting.

Financial Aid

For financial aid information, please call the Office of Financial Aid at (978) 934-4220 at the McGauvran Student Union Building.

Student Health Insurance

Effective September 1, 1989, every student who is enrolled in at least 9 semester hours or more in a degree program is required by Massachusetts State legislation to participate in a qualifying student health insurance program. The cost of this insurance is \$300.00 for the Spring and Summer semesters and payment of the appropriate fee will be required at registration. To waive participation in this program, students must fill out a form at registration showing equivalent coverage. Name of the insurance company and policy number are required information on the waiver form.

Academic Information

The University of Massachusetts Lowell is accredited by the New England Association of Schools and Colleges, which accredits schools and colleges in the six New England states. Membership in the Association indicates that the Institution has been carefully evaluated and found to meet standards agreed upon by qualified educators. The programs in Civil Engineering Technology, Electronic Engineering Technology, and Mechanical Engineering Technology are accredited by the Technology Accreditation Commission of the Accreditation Board for Engineering and Technology.

Catalog

Students should refer to the catalog for rules, regulations, program outlines, and course descriptions. The Division of Continuing Education catalog is available in the Advising Center and the Office of Enrollment Services/Continuing Education and at <http://www.uml.edu/DCE> on the World Wide Web.

Admission into a Certificate or Degree Program

Students who have graduated from high school or who have earned a high school equivalency certificate are invited to apply for programs leading to a Certificate or an Associate or Baccalaureate degree. Applications for all programs are accepted on a rolling admissions basis. Contact the Division of Continuing Education Office at (978) 934-2470 (certificate programs) or (978) 934-2474 (degree programs) for an application and information on the application procedure. There is no fee to apply.

The following degree and certificate programs are available on a part-time evening basis:

College of Engineering

Associate's Degrees

Civil Engineering Technology
Civil Engineering Technology: Water Treatment Option
Civil Engineering Technology: Wastewater Treatment Option
Civil Engineering Technology: Surveying Option
Electronic Engineering Technology
Mechanical Engineering Technology

Bachelor's Degrees

Civil Engineering Technology
Civil Engineering Technology: Environmental Option
Electronic Engineering Technology
Industrial Technology: Manufacturing, Plastics, or Water/Wastewater Option
Mechanical Engineering Technology
Mechanical Engineering Technology: Manufacturing Option

College of Arts and Sciences

Associate's Degree

Information Systems

Bachelor's Degrees

Applied Mathematics
Applied Mathematics:
Computer Mathematics Option
Criminal Justice
Criminal Justice: Paralegal Option
Information Systems
Liberal Arts

College of Management

Associate's Degrees

Accounting
Management

Bachelor of Science in Business Administration

Certificate Programs

Accounting
Banking
Computer-Assisted Manufacturing
Computer Engineering Technology
Computer Proficiency
Computer Science
Data/Telecommunications
Electronics Technology
Electro-Optics
Environmental Technology
Graphic Design and Digital Imaging
Hazardous Waste Management
Internet Systems Administration
Land Surveying
Manufacturing Technology
Multimedia Applications
Nutrition
Paralegal Studies
Plastics Engineering Technology
Purchasing Management
Quality Assurance
Spanish
Technical Writing
UNIX
Wastewater Treatment
Water Treatment
Windows Development Programming

Certificate Completion

When a student completes the necessary courses for a Certificate program, the student should complete and submit a Certificate Award Petition to the Division of Continuing Education.

Course Grades

Grade Reports: Grade reports for the summer session will be mailed to students approximately two weeks after exams end. Students who have received their PIN # can also call the Voice Response System at (978) 934-2050 to receive their summer grades, which will be available as soon as they are posted.

Advising Information

In an effort to foster quality advising and to service the information needs of our students, University College/Continuing Education has expanded the University's advising efforts.

Drop-in Advising Center

Students are welcome to drop by the Advising Center, located in Southwick Hall, from 8:30 am to 5:00 pm for general advising, information on associate and baccalaureate degrees and certificate programs, and/or to obtain catalogs and brochures. Call (978) 934-2474 for information.

Appointments with Program Coordinators and General Advisors

In addition to the advising conducted at the Advising Center, appointments with General Advisors and Program Coordinators are being scheduled at the Division of Continuing Education in Southwick Hall. Students are encouraged to call the Advising Center at (978) 934-2474. Evening supervisors are also available from 5:00-8:00 pm to answer questions and conduct status reviews.

Evening Supervisors

Professor Alan Doerr
Professor Bernard Shapiro

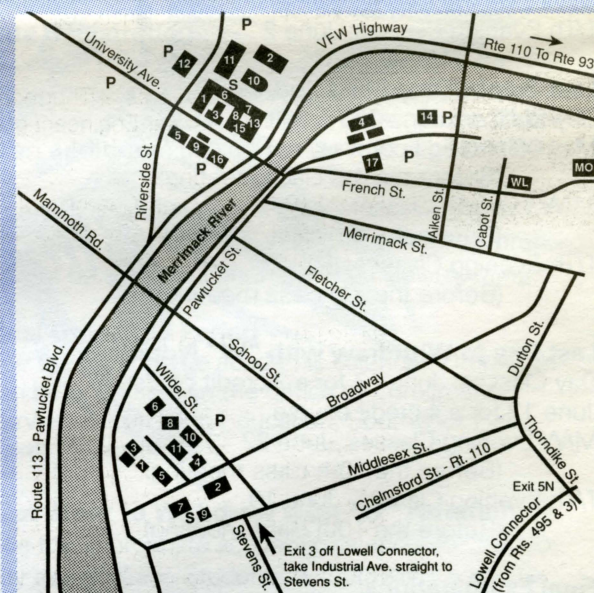
Faculty Advisors

Professor Alease Bruce: Nutrition and Health
Professor James Canning, Computer Science Certificate
Professor Paul Damour: Chemistry, Biology, Environmental Science, Physics
Professor Alan Doerr: Applied Mathematics
Professor Stephen Driscoll: Plastics and Industrial Technology, Plastics Option
Professor Ann Marie Hurley: Computer Math Option, Information Systems, Multimedia
Professor Paul Kales: Civil Engineering Technology and Industrial Technology, Water/Wastewater Option
Professor Joseph Lipchitz: Liberal Arts, Criminal Justice, Paralegal Studies
Professor Donald Pottle: Chair of Engineering Technology
Professor Charles Thompson: Accounting, Banking, Management
Professor Robert Tuholski: Mechanical Engineering Technology, Industrial Technology: Manufacturing Option
Professor Fahd Wakim: Electronic Engineering Technology

General Advisors

Ms. Elaine Bourret: Accounting, Banking, Management
Ms. Susan Desmond: Degree and Certificate Programs
Mr. David Driscoll: Multimedia
Mr. Steven Tello: CyberEd
Ms. Jane Worthley: Degree and Certificate Programs
Ms. Amy Yacus: Graphic Design and Digital Imaging

Campus Information



North	South
1 BL Ball Engineering Ctr.	1 Allen Hall
2 Costello Gym	2 CO Coburn
3 Cumnock Hall	3 Concordia Hall
4 Dormitories	4 Dining Hall
5 Eames Hall	5 DU Dugan Hall
6 EB Engineering	6 DR Durgin Hall
7 FA Falmouth	7 MA Mahoney Hall
8 KI Kitson	8 OL O'Leary Library
9 Alumni/Lydon Library	9 Power Plant
10 EC Pinanski	10 Student Union
11 OH Olney	11 WH Weed Hall
12 OS Olsen	P Parking
13 PA Pasteur	S Security
14 Research Foundation	
15 SO Southwick Hall	<u>Downtown</u>
16 Smith Hall	MO Mogan Center
17 Fox Student Union	WL Wannalancit
P Parking	
S Security	

Parking

Students are encouraged to park in the numerous parking lots on the North and South Campus. Parking stickers may be obtained from the University Police in Ball 125 North Campus (open 24 hours a day, 7 days a week). This sticker entitles students to park after 5:30 pm in any University parking lot except Cumnock Hall. Students should not park in "Residential Parking" areas because Lowell police will tow.

Locating Your Classroom

Upon registration, students are issued a confirmation printout which includes the two-letter building code along with the room number. Refer to the map and building key above to locate where your class will be held. For assistance, call the Advising Center at (978) 934-2480.

REMINDER: THIS COURSE LISTING COMBINES THE UNIVERSITY OF MASSACHUSETTS LOWELL DAY SCHOOL COURSES AND THE CONTINUING EDUCATION COURSES. IT IS IMPORTANT TO CHECK COURSE NUMBERS AND PREREQUISITES TO ENSURE ENROLLMENT IN THE CORRECT CLASS.

Summer Session I
May 26 – July 2, 1998

Day Classes begin on May 26 and meet Monday through Thursday for 3 credit courses and meet Monday through Friday for 4 credit courses.

M/W Evening Classes begin on May 27 and include 3 FRIDAYS: May 29, June 12, June 26 at the regularly scheduled hours.

T/Th Evening Classes begin on May 26 and include 2 FRIDAYS: June 5, June 19 at the regularly scheduled hours.

	No.	Title	Time	Days	Cr (Contact)	Prerequisite/Corequisite/Other	Instructor
Accounting	60.201-011**	Accounting/Financial	Noon-2:00 pm	M-Th	3		Charles Thompson
	60.201-012**	Accounting/Financial	6:00-9:00 pm	T/Th	3		Charles Thompson
	60.202-011	Accounting/Managerial	7:30-9:30 am	M-Th	3	P: 60.201 or 67.102	Samuel Chesler
	60.202-012	Accounting/Managerial	7:00-10:00 pm	T/Th	3	P: 60.201 or 67.102	Harold Sauter
	60.331-011*	Cost Management Systems	9:45-11:45 am	M-Th	3	P: 60.202, BSBA (non-Acct. majors)	Samuel Chesler
	60.331-012*	Cost Management Systems	6:00-9:00 pm	M/W	3	P: 60.202, BSBA (non-Acct. majors)	Anthony Carbone
	60.431-011*	Federal Income Taxes	7:00-10:00 pm	T/Th	3	P: 60.202 or 67.102, BSBA students	Department Faculty
	67.101-011	Accounting Principles I	7:00-10:00 pm	T/Th	3		Department Faculty
	67.102-011**	Accounting Principles II	7:00-10:00 pm	T/Th	3	P: 67.101	Claire Bickford
	67.209-011	Federal Income Taxes	7:00-10:00 pm	T/Th	3	P: 67.102	Department Faculty
*Restricted to BSBA Program or by College of Management permission. NOTE: Courses with the 67 prefix are not intended for students matriculating in the Bachelor of Science degree programs in the College of Management. 60.201 is for students with some accounting/business experience. 67.101 is for students with no accounting experience. **Students may not receive credit for both 60.201 and 67.102. CERTIFICATE IN ACCOUNTING (See page 17 for required courses.)							
Art/Computer Graphics (see also Computer Mathematics)	70.291-021	Introduction to Graphic Design (14 wks.)	7:00-10:00 pm	T	3	P: Basic Macintosh familiarity	Anne Katzeff
CERTIFICATE IN GRAPHIC DESIGN AND DIGITAL IMAGING (See page 18 for required courses.) Note: While the above course will not directly transfer into the Art Dept.'s B.A./B.F.A. day school degree program, certain two-course clusters may be accepted for transfer upon prior department approval.							
Art History	58.101-011	Art Appreciation	7:00-10:00 pm	M/W	3	AE, Area II	Charles Giuliano
	58.203-011	Survey of Art I	7:30-9:30 am	M-Th	3	AE, HS, Area II	Liana Cheney
	58.204-011	Survey of Art II	9:45-11:45 am	M-Th	3	AE, HS, Area II	Liana Cheney
Banking	69.119-011	Commerical Lending	7:00-10:00 pm	T/Th	3		Department Faculty
Biological Sciences	35.211-011	Basic Clinical Microbiology & Pathology	9:45-11:45 am	M-Th	3	P: 35.102, 35.104; C: 35.213, SL	Jacob Lam
	35.213-011	Basic Clinical Micro. & Pathology Lab	Noon-3:00 pm	M/T/W	1 (3)	P: 35.102, 35.104; C: 35.211, SL	Jacob Lam
	81.215-011	Introduction to Marine Biology	7:30-9:30 am	M-Th	3	C: 81.217, SL	Department Faculty
	81.217-011	Introduction to Marine Biology Lab	9:45-11:45 am	M/W/Th	1 (3)	C: 81.215, SL	Department Faculty
	81.320-011	Botany	7:30-9:30 am	M-Th	3	C: 81.322, SL	Ezequiel Rivera
	81.322-011	Botany Lab	2:15-5:15 pm	M/Th	1 (3)	C: 81.320, SL	Ezequiel Rivera
	83.101-011	Life Science I	Noon-2:00 pm	M-Th	3	C: 83.103, Area III, SL	Siu-Lam Lee
	83.101-012	Life Science I	7:00-10:00 pm	T/Th	3	C: 83.103, Area III, SL	G. Skinner-Brassard
	83.103-011	Life Science I Lab	2:15-4:15 pm	T/Th	1 (2)	C: 83.101, Area III, SL	Siu-Lam Lee
	NEW! 83.220-011	An Introduction to Ecology	Noon-2:00 pm	M-Th	3	P: Introductory Biology or Life Science	Michael Topping
Chemical & Nuclear Engineering	10.347-011	Elements of Thermodynamics and Nuclear Engineering	7:30-9:30 am	M-Th	3	P: 92.132, 95.141	Department Faculty
Chemistry	84.111-011	General Chemistry I	Noon-2:00 pm	M-Th	3	SL	K. P. Li
	84.113-011	General Chemistry Lab I	2:15-5:15 pm	M/W/Th	1 (3)	C: 84.111, SL	Paul Damour
	84.121-011	Chemistry I	9:45-11:45 am	M-Th	3	P: Science, Eng. & Eng. Tech. majors only; others with dept. permission; C: 84.123, SL	Philip Lamprey
	84.121-012	Chemistry I	6:00-9:00 pm	M/W	3	P: Science, Eng. & Eng. Tech. majors only; others with dept. permission; C: 84.123, SL	Peter Gabriel
	84.123-011	Chemistry Lab I	2:15-5:15 pm	M/W/Th	1 (3)	C: 84.121, SL	Department Faculty
	84.123-012	Chemistry Lab I	7:00-10:00 pm	T/Th	1 (3)	C: 84.121, SL	Paul Damour
	84.221-011	Organic Chemistry I	Noon-2:00 pm	M-F	3 (4)	P: 84.122, 84.124; C: 84.229, SL	Carmen Scholz
	84.229-011	Organic Chemistry Lab I	2:15-6:15 pm	M/W/Th	1 (4)	C: 84.221, SL	James Foley
	86.131-011	Environmental Chemistry I	7:00-10:00 pm	M/W	3		Charles Panagiotakos
	86.223-011	Organic Chemistry I	7:00-10:00 pm	T/Th	3	P: 84.122, 84.124; C: 86.225, SL	Gene Davis
	86.225-011	Organic Chemistry Lab I	6:00-10:00 pm	M/W	1 (4)	C: 86.223, SL	Judith Freeman
Cinema	52.335-011	Cinema and Italian Americans	9:45-11:45 am	M-Th	3	Area II, HV, AE	Mario Aste
	52.378-011	Italian Cinema and Culture	Noon-2:00 pm	M-Th	3	Area II, HV, AE	Mario Aste
Civil Engineering Technology	15.113-011	CAD	7:00-10:00 pm	T/Th	2 (3)	P: 23.101	C. William Lincoln
	15.246-011	Hydraulics	7:00-10:00 pm	T/Th	3	P: 15.237 or 23.221	Jan Morrill
	CERTIFICATE IN ENVIRONMENTAL TECHNOLOGY (See page 18 for required courses.) CERTIFICATE IN LAND SURVEYING (See page 18 for required courses.)						
Civil Engineering Technology Water/Wastewater Option	15.152-011	Water Biology	7:00-10:00 pm	T/Th	3		Therese Champigny
	15.340-011	Hazardous Waste Management	7:00-10:00 pm	M/W	3		Nihar Mohanty
	86.131-011	Environmental Chemistry I	7:00-10:00 pm	M/W	3		Charles Panagiotakos
	CERTIFICATE IN WATER TREATMENT (See page 20 for required courses.) CERTIFICATE IN WASTEWATER TREATMENT (See page 19 for required courses.)						
Computer Mathematics (see also Computer Science and Art/Computer Graphics)	90.171-011	Applications Software: Access	6:00-9:00 pm	T/Th	3		Susan L'Italien
	90.230-011	Introduction to Multimedia/Mac	7:00-10:00 pm	T/Th	3		Darryl Benjamin
	90.230-012	Introduction to Multimedia/Windows	7:00-10:00 pm	M/W	3		Chris Perry
	90.231-011	Graphics for Multimedia/Windows	7:00-10:00 pm	T/Th	3	P: 90.230	Marina Javis
	90.233-011	Multimedia Authoring Software Using Macromedia's Director/Mac	7:00-10:00 pm	M/W	3	P: 90.230	Robin Masi
	90.233-012	Multimedia Authoring Software Using Macromedia's Director/Windows	7:00-10:00 pm	T/Th	3	P: 90.230	Beatrice Lee
	90.234-021	Designing and Developing Interactive Media (14 weeks) Mac/Windows	7:00-10:00 pm	Th	3	P: 90.230, 90.231, 90.232, 90.233 or instructor permission	Steve Gildea
	90.238-012	Designing/Developing for the World Wide Web/Mac	7:00-10:00 pm	M/W	3	P: 90.231	Jamie Manning
	90.238-011	Designing/Developing for the World Wide Web/Windows	7:00-10:00 pm	M/W	3	P: 90.231	Fred Plaisted

Academic Credit Course Listing

90.239-021	Multimedia Scripting with Director's Lingo (14 weeks)	CyberEd/On-Line Course	3	P: Requires Macromedia Director	Jonathan Adams
90.301-011	Java Programming	7:00-10:00 pm T/Th	3	P: 92.268	Marjan Trutschl
90.301-012	Java Programming	7:00-10:00 pm M/W	3	P: 92.268	Department Faculty
90.301-021	Java Programming (14 weeks)	CyberEd/On-Line Course	3	P: 92.268, Requires Sun Java Dev. Kit	Department Faculty
90.301-022	Java Programming (14 weeks)	CyberEd/On-Line Course	3	P: 92.268, Requires Sun Java Dev. Kit	Adrian Smith
90.302-021	Java Script (14 weeks)	CyberEd/On-Line Course	3	P: 91.373 or 90.238	David Sciuto
90.305-021	Introduction to Perl (14 weeks)	CyberEd/On-Line Course	3	P: 92.267	Department Faculty
90.436-011	Software Project Management	7:00-10:00 pm T/Th	3		George Marootian
90.461-011	LAN/WAN Technologies	7:00-10:00 pm M/W	3		Department Faculty
90.462-011	Network Architecture and TCP/IP	7:00-10:00 pm M/W	3	P: 90.461	Anthony Forgetta
90.463-011	Advanced Network Technology	7:00-10:00 pm T/Th	3	P: 90.462	Alan Wu
90.464-011	Network Management	7:00-10:00 pm M/W	3	P: 90.463	Department Faculty
92.202-011	Introduction to PCs and MS Office	6:00-9:00 pm M/W	3		Terry Bass
92.202-012	Introduction to PCs and MS Office	6:00-9:00 pm T/Th	3		Robin Desmond
92.211-011*	Intro. to Programming with C	9:45-11:45 am M-Th	3	P: 92.121 or equivalent	Ann Marie Hurley
92.211-012*	Intro. to Programming with C	7:00-10:00 pm M/W	3	P: 92.121 or equivalent	James Brzowski
92.211-013*	Intro. to Programming with C	7:00-10:00 pm T/Th	3	P: 92.121 or equivalent	Department Faculty
92.212-011	Intro. to Programming with C II	7:00-10:00 pm M/W	3	P: 92.211	Sean McGowan
92.220-011	Visual Basic	7:00-10:00 pm T/Th	3		Randhir Chhatwal
92.220-012	Visual Basic	7:00-10:00 pm M/W	3		Arthur Chadbourne
92.220-023	Visual Basic (14 weeks)	CyberEd/On-Line Course	3	Requires Visual Basic 5.0	Randhir Chhatwal
92.220-024	Visual Basic (14 weeks)	CyberEd/On-Line Course	3	Requires Visual Basic 5.0	Arthur Chadbourne
92.267-011*	C Programming	Noon-2:00 pm M-Th	3	P: previous programming exp.	Ann Marie Hurley
92.267-012*	C Programming	6:00-9:00 pm M/W	3	P: previous programming exp.	E. D'Entremont
92.267-013*	C Programming	7:00-10:00 pm M/W	3	P: previous programming exp.	Department Faculty
92.267-014*	C Programming	6:00-9:00 pm T/Th	3	P: previous programming exp.	Department Faculty
92.267-015*	C Programming	7:00-10:00 pm T/Th	3	P: previous programming exp.	Timothy Niesen
92.267-026*	C Programming (14 weeks)	CyberEd/On-Line Course	3	P: previous programming exp.; requires C Compiler software	Timothy Niesen
92.267-027*	C Programming (14 weeks)	CyberEd/On-Line Course	3	P: previous programming exp.; requires C Compiler software	Ann Marie Hurley
92.268-011	C++ Programming	7:00-10:00 pm M/W	3	P: 92.267 or 92.212	Department Faculty
92.268-024	C++ Programming (14 weeks)	CyberEd/On-Line Course	3	P: 92.267 or 92.212; requires C Compiler software	Mark Hertel
92.268-025	C++ Programming (14 weeks)	CyberEd/On-Line Course	3	P: 92.26 or 92.212; requires C Compiler software	Lance Smith
92.268-026	C++ Programming (14 weeks)	7:00-10:00 pm T	3	P: 92.267 or 92.212	Mark Hertel
92.270-011	Visual C++	7:00-10:00 pm M/W	3	P: 92.268	Department Faculty
92.270-012	Visual C++	7:00-10:00 pm T/Th	3	P: 92.268	Department Faculty
92.311-011	Intro. to the UNIX Op. Sys.	7:00-10:00 pm M/W	3		Andrew Garside
92.311-012	Intro. to the UNIX Op. Sys.	7:00-10:00 pm T/Th	3		Department Faculty
92.311-013	Intro. to the UNIX Op. Sys.	7:00-10:00 pm T/Th	3		Frederick Vegliante
92.311-023	Intro. to the UNIX Op. Sys. (14 weeks)	CyberEd/On-Line Course	3		Frederick Vegliante
92.311-024	Intro. to the UNIX Op. Sys. (14 weeks)	CyberEd/On-Line Course	3		Department Faculty
92.312-011	UNIX Shell Programming	7:00-10:00 pm M/W	3	P: 92.311	Department Faculty
92.312-021	UNIX Shell Programming (14 weeks)	CyberEd/On-Line Course	3	P: 92.311	Michael Richards
92.360-011	Intro. to Data Structures/C	7:00-10:00 pm T/Th	3	P: 92.267, 92.212 and 92.364	Daniel Leach
92.360-021	Intro. to Data Structures/C (14 weeks)	CyberEd/On-Line Course	3	P: 92.267, 92.212 and 92.364	Victor Gagnon
92.363-011	Intro. to Data Analysis	9:45-11:45 am M-Th	3	P: 92.183 or equivalent	Alexander Olsen
92.364-011	Problem Solving with C	7:00-10:00 pm T/Th	3	P: 92.212 or 92.267	Sean McGowan
92.419-021	Computer Alg. with MATHEMATICA (14 weeks)	CyberEd/On-Line Course	3	P: 92.126 or a computer prog. language; requires MATHEMATICA software	Kenneth Levasseur
92.474-011	Relational Database Concepts	5:00-8:00 pm T/Th	3	P: 92.267 or equivalent	Thomas Cummings

*Students may not receive credit for both 92.211 and 92.267

CERTIFICATE IN COMPUTER PROFICIENCY (See page 17 for required courses.)

CERTIFICATE IN DATA/TELECOMMUNICATIONS (See page 18 for required courses.)

CERTIFICATE IN UNIX (See page 19 for required courses.)

CERTIFICATE IN MULTIMEDIA APPLICATIONS (See page 20 for required courses.)

CERTIFICATE IN INTERNET SYSTEMS ADMINISTRATION (See page 18 for required courses.)

CERTIFICATE IN WINDOWS DEVELOPMENT PROGRAMMING (See page 20 for required courses.)

CERTIFICATE IN COMPUTER SCIENCE (See page 17 for required courses.)

Computer Science (see also Mathematics)

91.113-011	Exploring the Internet	7:00-10:00 pm M/W	3		Marjan Trutschl
91.113-012	Exploring the Internet	9:45-11:45 am M-Th	3		Department Faculty
91.301-021	Organization of Programming Languages (14 weeks)	6:00-9:00 pm W	3	P: 91.250	Richard Boccuzzi
91.305-021	Computer Architecture (14 weeks)	5:30-8:30 pm T	3	P: 91.250	David Hendrickson
91.308-021	Operating Systems (14 weeks)	5:00-8:00 pm T	3	P: 91.250, 91.305	Ali Rafiemyhr
91.371-011	Internet Systems Administration	7:00-10:00 pm T/Th	3	P: 92.311	Department Faculty
91.373-011	Dynamic HTML Development	7:00-10:00 pm T/Th	3	P: 92.311	Department Faculty
91.373-022	Dynamic HTML Development (14 weeks)	CyberEd/On-Line course	3	P: 92.311	William Dubie
91.382-011	Windows Programming in C and C++	7:00-10:00 pm M/W	3	P: 92.269 or 92.270	Department Faculty
91.404-021	Analysis of Algorithms (14 weeks)	6:00-9:00 pm Th	3	P: 91.250, 92.322	Department Faculty
91.404-022	Analysis of Algorithms (14 weeks)	TBA TBA	3	P: 91.250, 92.322	Department Faculty
91.470-021	Topics on the Internet: Intellectual Property Rights and Copyright Issues (14 weeks)	CyberEd/On-Line Course	3		W. Neil Hurley
CERTIFICATE IN COMPUTER SCIENCE (See page 17 for required courses.)					

Criminal Justice

(see also Paralegal Studies)

44.101-011	The Criminal Justice System	Noon-2:00 pm M-Th	3		Douglas Morrow
44.111-011	Industrial Security	7:00-10:00 pm M/W	3		John Pignato
44.201-011	Computer Applications in CJ	7:30-9:30 am M-Th	3	P: 44.101	Joseph Lipchitz
44.221-011	Criminology I	7:00-10:00 pm T/Th	3		Department Faculty
44.234-011	Criminal Law	7:30-9:30 am M-Th	3		Anthony Petrosino
44.351-011	Community-Based Corrections	7:00-10:00 pm M/W	3		Steven Sacco
44.380-011	Selected Issues: Stress Management	6:00-9:00 pm T/Th	3		Gerald Tully
44.390-011	Intro. to Criminal Justice Research Methods	9:45-11:45 am M-Th	3	P: 44.101	Alan Lincoln
44.422-011	Victimology	6:00-9:00 pm T/Th	3		Monique Graf
44.435-011	Alternative Dispute Resolution	7:00-10:00 pm M/W	3		A. O'Connor Downes
44.496-011	Criminal Justice Practicum	TBA TBA	3	P: Instructor permission	Gerald Hotaling
44.496-012	Criminal Justice Practicum	TBA TBA	3	P: Instructor permission	Alan Lincoln
44.497-011	Paralegal Practicum	TBA TBA	3	P: Minimum of 3 paralegal courses and instr. permission; call (978) 649-9880	Donna Zils Banfield

Economics

49.201-011	Economics I (Microeconomics)	9:45-11:45 am M-Th	3	Area I, BS	Department Faculty
49.201-012	Economics I (Microeconomics)	7:00-10:00 pm M/W	3	Area I, BS	Michael Carter
49.201-013	Economics I (Microeconomics)	7:00-10:00 pm T/Th	3	Area I, BS	Department Faculty
49.202-011	Economics II (Macroeconomics)	7:00-10:00 pm T/Th	3	Area I, BS	Ernesto Sanz
49.202-012	Economics II (Macroeconomics)	9:45-11:45 am M-Th	3	Area I, BS	Department Faculty
49.211-011	Statistics I	9:45-11:45 am M-Th	3	P: 92.122 or equivalent	Department Faculty

Academic Credit Course Listing

Electrical Engineering	16.201-011	Circuit Theory I	7:00-9:00 pm	T-F	3	P: 92.132; C: 16.207	Stephen Spurr
	16.312-011	Electronics II Laboratory	TBA	TBA	2 (3)		Alan Rux
	16.364-011	Engineering Mathematics	7:00-9:00 pm	M-Th	3	P: 92.234 and 16.201	A.J. Noushin
	16.366-011	Electronics II	TBA	TBA	3		David Wade
	16.409-011	Project Laboratory	TBA	TBA	3	P: Department Faculty permission	Ziyad Salameh
	16.491-011	Industrial Experience	TBA	TBA	3	P: Permission by Alan Rux	Alan Rux
	16.492-011	Industrial Experience	TBA	TBA	3	P: Permission by Alan Rux	Alan Rux
Electronic Engineering Technology	17.130-011	Electrical Basics and Laboratory	7:00-10:00 pm	T/Th	2 (3)	P: 42.226, 92.219 or 92.263, or 92.267, 99.132	Department Faculty
	17.213-011	Electric Circuits	7:00-10:00 pm	M/W	3	P: 92.125 (may be taken concurrently) and either 92.219 or 92.267	James Davis
	17.477-011	Electromagnetic Theory II	7:00-10:00 pm	T/Th	3	P: 17.376, 92.234	Syama Chaudhuri
CERTIFICATE IN ELECTRO-OPTICS (See page 18 for required courses.)							
English	42.101-011	College Writing I	7:30-9:30 am	M-Th	3		William Coughlin
	42.101-012	College Writing I	7:00-10:00 pm	M/W	3		Department Faculty
	42.102-011	College Writing II	9:45-11:45 am	M-Th	3	P: 42.101	William Coughlin
	42.102-012	College Writing II	7:00-10:00 pm	T/Th	3	P: 42.101	Department Faculty
	42.103-011	College Writing I for International Students	7:00-10:00 pm	M/W	3		June Tumblin
	42.205-011	Human Values—Western Culture	7:00-10:00 pm	T/Th	3	P: LTV, Area II	Joseph Zaitchik
	42.212-011	The Short Story	7:00-10:00 pm	T/Th	3	P: 42.102, Area II, LT	Department Faculty
	42.217-011	Horror Story	Noon-2:00 pm	M-Th	3	P: 42.102, Area II, LT	Robert Kachur
	42.221-021	Writing for Interactive Media (14 weeks)	CyberEd/On-Line Course		3	Requires word processing and flow charting software	Timothy Garrard
	42.224-011*	Business Writing	7:00-10:00 pm	M/W	3	P: 42.102	Rosalie Ryan
	42.224-021*	Business Writing (14 weeks)	CyberEd/On-Line Course		3	P: 42.102; requires word processing software	Nancy Brown
	42.226-011*	Technical and Scientific Communication	6:30-9:30 pm	T/Th		P: 42.102	Department Faculty
	42.226-021*	Technical and Scientific Communication (14 weeks)	CyberEd/On-Line Course		3	P: 42.102; requires word processing software	Dirk Messelaar
	42.232-011	Turning Fiction into Film	7:00-10:00 pm	M/W	3	P: 42.102, LT	Robert Kachur
	42.236-011	Science Fiction and Fantasy	6:30-9:30 pm	M/W	3	P: 42.102	Katya Reimann
	42.267-011	Introduction to Shakespeare	9:45-11:45 am	M-Th	3	P: 42.102, Area II, LT	William Hersey
	42.282-011	Crime in Literature	7:30-9:30 am	M-Th	3	P: 42.102, Area II, LT	William Hersey
	42.294-011	History of American Literature I	7:00-10:00 pm	M/W	3	P: 42.102, Area II, LT	Gretchen DiGeronimo
	42.302-011	Creative Writing: Fiction	6:00-9:00 pm	M/W	3	P: 42.102	Jay Atkinson
	42.303-011	Creative Writing: Poetry	7:00-10:00 pm	M/W	3	P: 42.102	J. Dickerman-Nelson
	42.304-011	Creative Writing: Screenwriting	7:00-10:00 pm	T/Th	3	P: 42.102	Richard Farrell
	42.403-021	Advanced Software Writing (14 weeks)	7:00-10:00 pm	T	3	P: 42.402	Department Faculty
*Please note that students may not receive credit for both 42.224 and 42.226.							
Environmental Sciences	87.115-011	Astronomy	7:00-10:00 pm	T/Th	3	Area III, SC	Arnold O'Brien
	(See offerings under Civil Engineering Technology, Chemistry, Environmental Sciences, and Water/Wastewater Option.) CERTIFICATE IN ENVIRONMENTAL TECHNOLOGY (See page 18 for required courses.)						
Finance	61.301-011*	Business Finance	6:00-9:00 pm	T/Th	3	P: 60.201, 49.201, 49.202, BSBA students	Michael Rouse
	61.300-011*	Investments	7:30-9:30 am	M-Th	3	P: 60.201, BSBA students	Gerald Downey
	61.300-012*	Investments	9:45-11:45 am	M-Th	3	P: 60.201, BSBA students	Gerald Downey
*Restricted to BSBA Program or by College of Management permission.							
Health Professions	30.201-011	Community Health	6:00-9:00 pm	T/Th	3		Nicole Champagne
	30.306-011	Introduction to Gerontology	Noon-2:00 pm	M-Th	3	BS	Judith Conahan
	30.315-011	Kinesiology and Lab	9:45-11:45 am	M-F	4	P: All freshmen, soph. E.P. courses and 1 yr. of A. and P. and 1 yr. of Physics	Joseph Dorsey
	35.101-011	Human Anatomy and Physiology I	9:45-11:45 am	M-Th	3	C: 35.103, SL	Ted Namm
	35.103-011	Human Anatomy & Phys. I Lab	1:00-4:00 pm	T/W/Th	1 (3)	C: 35.101, SL	Alease Bruce
	35.206-011	Human Nutrition	9:45-11:45 am	M-Th	3		Thomas Wilson
	35.211-011	Basic Clinical Microbiology and Path.	9:45-11:45 am	M-Th	3	P: 35.102, 35.104; C: 35.213, SL	Jacob Lam
	35.213-011	Basic Clinical Micro. & Path. Lab	Noon-3:00 pm	M/T/W	1 (3)	P: 35.102, 35.104; C: 35.211, SL	Jacob Lam
	35.356-011	Pharmacology	7:30-9:30 am	M-Th	3	P: Junior level	Arthur Vergados
	36.350-011	Human Biochemistry	4:15-6:15 pm	M-Th	3	P: 35.252 or equivalent	John Dolhun
History (see also Art History)	43.105-011	Western Civilization I	7:30-9:30 am	M-Th	3	Area II, HS	Jonathan Liebowitz
	43.106-011	The Modern World	9:45-11:45 am	M-Th	3	Area II, HS	Jonathan Liebowitz
	43.111-011	U.S. History to 1877	9:45-11:45 am	M-Th	3	Area II, HS	Dean Bergeron
	43.373-011	U.S. Social History Since 1950	7:00-10:00 pm	M/W	3	Area II, HS	Pamela Edwards
	46.357-011	Environmental History and Politics	7:30-9:30 am	M-Th	3	Area II, HS	Dean Bergeron
Intercollegiate Arts & Science	59.205-011	Human Values—Western Culture	7:00-10:00 pm	T/Th	3	LTV, Area II	Joseph Zaitchik
	59.240-011	Introduction to Gender Studies	7:30-9:30 am	M-Th	3		Susan Gallagher
Languages	50.211-011	Intermediate Conversational French I	7:00-10:00 pm	M/W	3	Area II	Roger Lacerte
	51.211-011	Intermediate German I	7:00-10:00 pm	T/Th	3	P: 51.102, Area II	Robert Whelan
	51.491-011	Twentieth Century German Literature	6:00-9:00 pm	T/Th	3		Robert Whelan
	52.335-011	Cinema and Italian Americans	9:45-11:45 am	M-Th	3	Area II, HV, AE	Mario Aste
	52.378-011	Italian Cinema and Culture	Noon-2:00 pm	M-Th	3	Area II, HV, AE	Mario Aste
	53.101-011	Beginning Japanese I	7:00-10:00 pm	T/Th	3		Department Faculty
	54.101-011	Beginning Spanish I	7:30-9:30 am	M-Th	3		J. Heli Hernandez
	54.101-012	Beginning Spanish I	7:00-10:00 pm	M/W	3		Department Faculty
	54.211-011	Intermediate Conversational Spanish I	9:45-11:45 am	M-Th	3	P: 54.102 or equivalent, Area II	J. Heli Hernandez
	54.211-012	Intermediate Conversational Spanish I	7:00-10:00 pm	T/Th	3	P: 54.102 or equivalent, Area II	F. Asimakopoulos
	54.254-011	Topics in Conversational Spanish	6:00-9:00 pm	T/Th	3		Department Faculty
CERTIFICATE IN SPANISH (See page 19 for required courses.)							
Legal Studies (see also Paralegal Studies)	41.262-011	Introduction to Business Law	7:00-10:00 pm	T/Th	3	BS, Collateral to Criminal Justice	Department Faculty
	41.363-011	Corporate and Property Law	7:00-10:00 pm	T/Th	3		Eugene Reardon
	41.367-011	Environmental Law	7:00-10:00 pm	M/W	3		William Burke
	41.370-011	Real Estate Law	7:00-10:00 pm	T/Th	3		J. Alan Roberts
	41.376-011	Family Law	7:30-9:30 am	M-Th	3		Russell Karl
	41.376-012	Family Law	7:00-10:00 pm	M/W	3		Russell Karl
	41.381-011	Women and the Law	7:00-10:00 pm	T/Th	3		Nancy Dick
	41.387-011	Legal Research Methods	7:00-10:00 pm	M/W	3		Nancy Dick
	41.390-011	Litigation	7:00-10:00 pm	M/W	3		Michael Martell
	41.392-011	Wills, Trusts, and Estates	7:00-10:00 pm	T/Th	3		Debra Thompson
	41.395-011	Bankruptcy Law	7:00-10:00 pm	M/W	3		Peter Stocks

Academic Credit Course Listing

Management (see also Accounting and Finance)	62.201-011	Marketing Principles	6:00-9:00 pm	T/Th	3	P: 47.101, 48.101, 49.201	Irwin Shapiro
	62.401-011*	Marketing Communications	11:00-2:00 pm	T/Th	3	P: 62.201, BSBA students	Kenneth Parker
	62.406-021*	Purchasing and Materials Mgmt. (8 weeks)	CyberEd/On-Line Course		3	P: 62.201, BSBA students	David Lewis
	62.496-011*	Special Topics: Entrepreneurship	7:30-10:30 am	T/Th	3	P: 62.201, BSBA students	Kenneth Parker
	63.210-011	Operations Analysis	7:30-10:30 am	M/W	3	P: 49.211	M. Riaz Khan
	63.210-012	Operations Analysis	6:00-9:00 pm	T/Th	3	P: 49.211	George Liaw
	63.371-011*	Operations Management I	9:45-11:45 am	M-Th	3	P: 49.211, 63.210, BSBA students	George Liaw
	66.301-011*	Organizational Behavior	9:45-12:45 pm	T/Th	3	P: BSBA students	Stuart Freedman
	66.490-011*	Strategic Management	9:45-12:45 pm	M/W	3	P: 61.301, 62.201, 63.371, 66.301, BSBA students (Summer 1998 graduates only)	Louis Zivic
	69.231-011	Business Finance	7:00-10:00 pm	M/W	3	P: 67.102, 49.201, 49.202	Department Faculty
	69.253-011	Intro. to Management & Org. Behavior	7:00-10:00 pm	M/W	3		P. G. Zicari
	69.276-011	Entrepreneurial Management	7:00-10:00 pm	M/W	3		Mel Epstein
	69.277-011	Leadership in Management	7:00-10:00 pm	T/Th	3		Sharron Lovins

*Restricted to BSBA Program or by College of Management permission.

NOTE: Courses with the 69 prefix are not intended for matriculating University of Massachusetts Lowell day students and will not transfer into the College of Management day programs.

CERTIFICATE IN PURCHASING MANAGEMENT (See page 19 for required courses.)

Mathematics (see also Computer Mathematics)	90.111-011*	Fundamentals of Algebra	7:00-10:00 pm	T/Th	3		Anthony Sokolowski
	92.110-011	College Algebra	Noon-2:00 pm	M-Th	3	Liberal Arts majors only, Area III	Department Faculty
	92.111-011	Mathematical Perspectives	9:45-11:45 am	M-Th	3	Liberal Arts majors only, Area III, MA	Stanley Spiegel
	92.121-011**	Precalculus Mathematics I	9:45-11:45 am	M-Th	3	Area III, MA	Alan Kaplan
	92.121-012**	Precalculus Mathematics I	7:00-10:00 pm	T/Th	3	P: 90.111 or placement exam,***	Department Faculty
	92.122-011	Management Calculus	7:30-9:30 am	M-Th	3	Area III, MA	Department Faculty
	92.122-012	Management Calculus	7:00-10:00 pm	M/W	3	P: 92.121, Area III, MA	Department Faculty
	92.123-011	Precalculus Mathematics II	7:00-10:00 pm	T/Th	3	P: 92.121, MA	Candice Weston
	92.125-011	Calculus A	7:00-10:00 pm	T/Th	3	P: 92.121, Area III, MA	Department Faculty
	92.126-011	Calculus B	7:00-10:00 pm	M/W	3	P: 92.125, MA	Theresa Schille
	92.127-011	Calculus IA	9:45-11:45 am	M-F	4	MA	Department Faculty
	92.128-011	Calculus IB	9:45-11:45 am	M-F	4	P: 92.127, MA	Department Faculty
	92.131-011	Calculus I	9:45-11:45 am	M-F	4	MA	Department Faculty
	92.131-012	Calculus I	7:30-9:30 am	M-F	4	MA	Alan Kaplan
	92.132-011	Calculus II	7:30-9:30 am	M-F	4	P: 92.131, MA	Marvin Stick
	92.132-012	Calculus II	9:45-11:45 am	M-F	4	P: 92.131, MA	Marvin Stick
	92.183-011	Introduction to Statistics	7:30-9:30 am	M-Th	3	P: 90.111 or equivalent, Area III, MA	Alexander Olsen
	92.183-012	Introduction to Statistics	7:00-10:00 pm	T/Th	3	P: 90.111 or equivalent, Area III, MA	Erica Schissler
	92.225-011	Calculus C	7:00-10:00 pm	T/Th	3	P: 92.126, MA	Philip Breen
	92.226-011	Calculus D	7:00-10:00 pm	T/Th	3	P: 92.225, MA	Robert Johnson
	92.231-011	Calculus III	Noon-2:00 pm	M-F	4	P: 92.132, MA	Ronald Brent
	92.234-011	Differential Equations	9:45-11:45 am	M-Th	3	P: 92.132 or 92.225, MA	J. Graham-Eagle
	92.234-012	Differential Equations	7:00-10:00 pm	T/Th	3	P: 92.132 or 92.225, MA	Raj Prasad
NEW!	92.310-011	Chaos Theory	3:30-6:30 pm	T/Th	3	P: 92.231	Raj Prasad
	92.321-011	Discrete Structures I	3:30-6:30 pm	T/Th	3	P: 90.112 or 92.121	Alan Doerr
	92.322-011	Discrete Structures II	9:45-11:45 am	M-Th	3	P: 92.321 and 92.231, 92.234	Alan Doerr
	92.363-011	Intro. to Data Analysis	9:45-11:45 am	M-Th	3	P: 92.183 or equivalent	Alexander Olsen
	92.386-011	Statistics for Engineering and Science	9:45-11:45 am	M-Th	3	P: 92.126 or 92.132	Lee Jones
	92.411-011	Complex Variables I	9:45-11:45 am	M-Th	3	P: 92.231 or 92.226	Department Faculty
	92.416-011	Pattern Recognition and Neural Networks	6:30-9:30 pm	M/W	3	P: 92.386/Linear Algebra, or equiv.	Lee Jones
	92.419-021	Computer Alg. with MATHEMATICA (14 weeks)	CyberEd/On-Line Course		3	P: 92.126 or a computer prog. language; requires MATHEMATICA software	Kenneth Levasseur
	92.420-011	Mathematical Problem Solving	6:00-9:00 pm	T/Th	3	P: Calculus II or equivalent	Joseph Spadano
	92.421-011	Abstract Algebra I	9:45-11:45 am	M-Th	3	P: 92.221 or 92.321	Department Faculty
	92.480-011	Applied Combinatorics	5:30-8:30 pm	M/W	3	P: Calculus and Discrete Structures	Mark Yin

*Fundamentals of Algebra (90.111) is a preparatory course and cannot be credited toward a degree program at the University of Massachusetts Lowell.

**Students may not receive credit for both 90.112 and 92.121.

***Placement exam is given the first evening of class.

Many 500-level courses are well within the grasp of upper level undergraduates and may be used as electives. Refer to the Graduate School listing and contact the Graduate School for admissions procedures. University of Massachusetts Lowell Day students must have approval from the Mathematics Coordinator before taking courses with a 90 prefix.

Mechanical Engineering	22.211-011	Mechanics I	9:45-11:45 am	M-Th	3		Department Faculty
	22.213-011	Dynamics	Noon-2:00 pm	M-Th	3	P: 22.211, 92.132	Department Faculty
	22.403-011	M.E. Lab II: Measurement Engineering	3:00-7:00 pm	T/Th	3 (4)	P: Department Head permission, 22.302, 22.311, 22.342	Department Faculty
	22.441-011	Analysis of Thermo-Fluid Processes	7:30-9:30 am	M-Th	3	P: 22.242, 22.381	Yakov Zilberberg
	22.485-011	Special Topics in Aero Engineering	9:45-11:45 am	M-Th	3	P: 22.342	Eugene Niemi

Mechanical Engineering Technology & Manufacturing Option	23.101-011	Engineering Graphics	7:00-10:00 pm	T/Th	2 (3)		Paul Rich
	23.200-011	CADrf	7:00-10:00 pm	M/W	3	P: 23.101	Norman Truscott
	23.221-011	Statics	7:00-10:00 pm	M/W	3	P: 92.125, 92.263, 99.131	Marilynn Keppler
	23.241-011	Elements of Thermodynamics I	7:00-10:00 pm	T/Th	3	P: 92.126, 92.263, 99.132	Vernon Oliver

CERTIFICATE IN MANUFACTURING TECHNOLOGY (See page 18 for required courses.)

Multimedia Applications	(See Computer Mathematics and Computer Science)						
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Music	71.100-011	Fundamentals of Musicianship	7:00-10:00 pm	M/W	3	Music majors only	Jacqueline Charette
	71.102-011	Music Theory II	7:30-9:30 am	M-Th	3	P: 71.101	Lisa Cleveland
	71.104-011	Solfege II	9:45-11:45 am	M-Th	3	P: 71.103	Mark Peterson
	71.110-011	Basic Music Theory	7:00-10:00 pm	M/W	3	Non-Music majors, Area II, AE	Juanita Tsu
	71.201-011	Music Theory III	7:30-9:30 am	M-Th	3	P: 71.102	Mark Peterson
	71.203-011	Solfege III	9:45-11:45 am	M-Th	3	P: 71.104	Lisa Cleveland
	74.261-011	Survey of Music History I	7:30-9:30 am	M-Th	3		John Ogasapian
	74.262-011	Survey of Music History II	9:45-11:45 am	M-Th	3		John Ogasapian
	74.386-011	Rock and Roll (May 26-June 5)	10:00 am-5:00 pm	M-F	3		Scott Fredrickson
	For Summer Music Education Program, see page 16.						

Paralegal (see also Legal Studies & Criminal Justice)	41.103-011	Introduction to Paralegal Studies	7:00-10:00 pm	T/Th	3	BS	Donna Zils Banfield
	41.370-011	Real Estate Law	7:00-10:00 pm	T/Th	3		J. Alan Roberts
	41.376-011	Family Law	7:30-9:30 am	M-Th	3		Russell Karl
	41.376-012	Family Law	7:00-10:00 pm	M/W	3		Russell Karl
	41.387-011	Legal Research Methods	7:00-10:00 pm	M/W	3		Nancy Dick
	41.390-011	Litigation	7:00-10:00 pm	M/W	3		Michael Martell
	44.497-011	Paralegal Practicum	TBA	TBA	3	P: minimum of 3 paralegal courses and instr. permission; call (978) 649-9880	Donna Zils Banfield

CERTIFICATE IN PARALEGAL STUDIES (See page 19 for required courses.)

Academic Credit Course Listing

Philosophy	45.201-011	Introduction to Philosophy	9:45-11:45 am	M-Th	3	Area II and VC, HV	Donald LeBlanc
	45.201-012	Introduction to Philosophy	6:00-9:00 pm	T/Th	3	Area II and VC, HV	Michael Koran
	45.202-011	Introduction to Logic	7:00-10:00 pm	T/Th	3	Area II and VC, HV	Peter Skagestad
	45.203-011	Introduction to Ethics	7:00-10:00 pm	M/W	3	Area II and VC, HV	Jeffrey Hause
	45.203-012	Introduction to Ethics	9:45-11:45 am	M-Th	3	Area II and VC, HV	Tracey Stark
	45.314-011	Science Fiction and Philosophy	6:00-9:00 pm	T/Th	3	VC, HV	James Hart
Physics	95.103-011	General Physics I	9:45-11:45 am	M-Th	3	P: Algebra; C: 96.103, SL	Arthur Mittler
	95.121-011	Exploring the Universe	7:30-9:30 am	M-Th	3	Area III, SC	Paul Ring
	95.141-011	Physics I	7:30-9:30 am	M-F	3 (4)	C: 92.131, 96.141, SL	F. Raymond Hardy
	95.144-011	Physics II	9:45-11:45 am	M-F	3 (4)	P: 95.141; C: 92.132, 96.144, SL	Kunnat Sebastian
	96.103-011	Experimental General Physics I (2 days/week)	2:15-5:15 pm	T/Th	1 (1.5)	C: 95.103 or 95.201, SL	Arthur Mittler
	96.141-011	Experimental Physics I (2 days/week)	2:15-5:15 pm	M/W	1 (1.5)	C: 95.141, SL	F. Raymond Hardy
	96.144-011	Experimental Physics II (2 days/week)	2:15-5:15 pm	T/Th	1 (1.5)	P: 96.141; C: 95.144, SL	David Pullen
	99.101-011	Radiation and Life	9:45-11:45 am	M-Th	3	C: 99.102, SL, Area III	Department Faculty
Plastics	27.217-011	Plastics Laboratory	7:00-10:00 pm	T/Th	3	P: Coordinator permission	Paul Boothroyd
	27.251-011	Selected Topics I	7:00-10:00 pm	M/W	3	P: Coordinator permission	Department Faculty
	27.314-011	Packaging for the Environment	6:00-9:00 pm	M/W	3		Peter Baker
	27.453-011	Selected Topics III	7:00-10:00 pm	T/Th	3	P: Coordinator permission	Department Faculty
	Note: Courses with the 27 prefix are not eligible for graduate credit. CERTIFICATE IN PLASTICS ENGINEERING TECHNOLOGY (See page 19 for required courses.)						
Political Science	46.101-011	Introduction to American Politics	9:45-11:45 am	M-Th	3	Area I, BS	Susan Gallagher
	46.121-011	Introduction to International Relations	7:00-10:00 pm	M/W	3	Area I, BS	Paula McCabe
	46.230-011	Law and the Legal System	7:00-10:00 pm	M/W	3		Patricia Sullivan Talty
	46.357-011	Environmental History and Politics	7:30-9:30 am	M-Th	3	Area I, HS	Dean Bergeron
Psychology	47.101-011	General Psychology	7:30-9:30 am	M-Th	3	Area I, BS	Rubin Russell
	47.101-012	General Psychology	7:00-10:00 pm	T/Th	3	Area I, BS	Donna Goodwill
	47.209-011	Social Psychology	7:00-10:00 pm	M/W	3	Area I, Human Values, BS	Daryl Graves
	47.232-011	Psychology of Personality	7:00-10:00 pm	T/Th	3	Area I, BS	Alexandria Weida
	47.260-011	Human Development I	7:00-10:00 pm	M/W	3	Area I, BS	Phyllis Wentworth
	47.269-011	Research Methods	Noon-2:00 pm	M-Th	3	P: 47.101	Elizabeth Murphy
	47.272-011	Abnormal Psychology	9:45-11:45 am	M-Th	3	P: 47.101, Area I, BS	Richard Siegel
	47.276-011	Theories of Learning	7:00-10:00pm	M/W	3	P: 47.101	Rubin Russell
	47.328-011	Dynamics of Interpersonal Relations	6:00-9:00 pm	M/W	3	Area I	Noel Cartwright
	47.335-011	Psychology and Women	7:00-10:00 pm	M/W	3	Area I, Human Values	Charlene Drake
	47.360-011	Human Development II	7:30-9:30 am	M-Th	3	P: 47.260	Jane Worthley
	47.361-011	Prob./Issues in Child/Adolescent Psych.	7:00-10:00 pm	T/Th	3		S. McLaughlin Beltz
	47.473-011	Seminar: Social Psychology	2:15-5:15 pm	M/W	3	P: 47.209 or 47.255 & 47.269; AMST	Peter Hantzis
Radiological Sciences	(See Physics)						
Sociology	48.101-011	Introduction to Sociology	7:30-9:30 am	M-Th	3	Area I, BS	Levon Chorbajian
	48.101-012	Introduction to Sociology	7:00-10:00 pm	T/Th	3	Area I, BS	Levon Chorbajian
	48.201-011	Social Anthropology	7:00-10:00 pm	M/W	3	P: 48.101, BS	Mitra Das
	48.231-011	Sociology of the Family	7:00-10:00 pm	T/Th	3	P: 48.101, BS	Mitra Das
	48.317-011	Sociology of Genocide	7:00-10:00 pm	M/W	3	P: 48.101	Jack Porter
	48.348-011	Understanding the Latino Community	7:00-10:00 pm	T/Th	3	P: 48.101	Jorge Santiago
Technical Writing	42.403-021	Advanced Software Writing (14 weeks)	7:00-10:00 pm	T	3	P: 42.402	Department Faculty
Technical Writing courses are open to undergraduate and graduate students. CERTIFICATE IN TECHNICAL WRITING (See page 19 for required courses.)							
Water/Waste-Water Option	(See Civil Engineering Technology: Water/Wastewater Option.)						
Women's Studies	47.335-011	Psychology and Women	7:00-10:00 pm	M/W	3	Area I, Human Values	Charlene Drake
	59.240-011	Introduction to Gender Studies	7:30-9:30 am	M-Th	3		Susan Gallagher

REMINDER: THIS COURSE LISTING COMBINES THE UNIVERSITY OF MASSACHUSETTS LOWELL DAY SCHOOL COURSES AND THE CONTINUING EDUCATION COURSES. IT IS IMPORTANT TO CHECK COURSE NUMBERS AND PREREQUISITES TO ENSURE ENROLLMENT IN THE CORRECT CLASS.

Summer Session II

July 13 – August 20, 1998

Day Classes begin on July 13 and meet Monday through Thursday for a 3 credit course and meet Monday through Friday for a 4 credit course.

M/W Evening Classes begin on July 13 and include 2 FRIDAYS: July 17, July 31 at the regularly scheduled hours.

T/Th Evening Classes begin on July 14 and include 2 FRIDAYS: July 24, August 7 at the regularly scheduled hours.

	No.	Title	Time	Days	Cr (Contact)	P: Prerequisite/Corequisite/Other	Instructor
Accounting	60.202-021	Accounting/Managerial	9:45-11:45 am	M-Th	3	P: 60.201 or 67.102	Department Faculty
	60.331-021*	Cost Management Systems	9:45-11:45 am	M-Th	3	P: 60.202, BSBA (non-Acct. majors)	Anthony Carbone
	67.101-021	Accounting Principles I	7:00-10:00 pm	M/W	3		Claire Bickford
	67.102-021**	Accounting Principles II	7:00-10:00 pm	T/Th	3	P: 67.101	Claire Bickford
	*Restricted to BSBA Program or by College of Management permission. NOTE: Courses with the 67 prefix are not intended for students matriculating in the Bachelor of Science degree programs in the College of Management. **Students may not receive credit for both 60.201 and 67.102. CERTIFICATE IN ACCOUNTING (See page 17 for required courses.)						
Art/Computer Graphics (see also Computer Mathematics)	70.391-021	Advanced Graphic Design	7:00-10:00 pm	T/Th	3	P: 70.291, 70.245, or inst. permission	Carri Mullaney
	70.400-021	Portfolio Production Seminar	7:00-10:00 pm	M/W	3	P: 70.291, 70.240, 70.245, and 70.391 or inst. permission	Amy Yacus
(See Computer Mathematics for Multimedia course offerings.) CERTIFICATE IN GRAPHIC DESIGN AND DIGITAL IMAGING (See page 18 for required courses.) Note: While the above courses will not directly transfer into the Art Dept.'s B.A./B.F.A. day school degree program, certain two-course clusters may be accepted for transfer upon prior dept. approval.							

Academic Credit Course Listing

Art History	58.101-021	Art Appreciation	7:00-10:00 pm	T/Th	3	AE, Area II	Charles Giuliano
Banking	69.130-021	Commercial Loan Documentation & Calling Skills	7:00-10:00 pm	T/Th	3		Department Faculty
Biological Science	83.102-021	Life Science II	7:00-10:00 pm	M/W	3	Area III; C: 83.104, SL	Siu Lam Lee
	83.104-021	Life Science II Lab	7:00-10:00 pm	T/Th	1 (2)	C: 83.102, Area III, SL	Siu Lam Lee
	83.214-021	Human Ecology	9:45-11:45 am	M-Th	3		Priscilla Mattson
Chemistry	84.122-021	Chemistry II	Noon-2:00 pm	M-Th	3	P: 84.121; Science, Eng. & Eng. Tech. majors; others with department permission; C: 84.124, SL	S. McFarland
	84.122-022	Chemistry II	6:00-9:00 pm	M/W	3	P: 84.121; Sci., Eng. & Eng. Tech. majors; others with department permission; C: 84.124, SL	Peter Gabriel
	84.124-021	Chemistry Lab II	2:15-5:15 pm	M/T/Th	1 (3)	P: 84.123; C: 84.122, SL	Department Faculty
	84.124-022	Chemistry Lab II	7:00-10:00 pm	T/Th	1 (3)	P: 84.123; C: 84.122, SL	Department Faculty
	84.222-021	Organic Chemistry II A	Noon-2:00 pm	M-F	3 (4)	P: 84.221; C: 84.230, SL	Carmen Scholz
	84.230-021	Organic Chemistry Lab II A	2:15-6:15 pm	M/W/Th	1 (4)	P: 84.229; C: 84.222, SL	James Foley
	86.132-021	Environmental Chemistry II	7:00-10:00 pm	M/W	3	P: 86.131, SC	Charles Panagiotakos
	86.224-021	Organic Chemistry II	7:00-10:00 pm	T/Th	3	P: 86.223; C: 86.226; SL	Gene Davis
	86.226-021	Organic Chemistry Lab II	6:00-10:00 pm	M/W	1 (4)	P: 86.225; C: 86.224; SL	Judith Freeman
Cinema	52.374-021	Classics of Italian Cinema	9:45-11:45 am	M-Th	3	Area II, HV, AE	Mario Aste
	52.380-021	Italian Cinema: Directors and Themes	7:30-9:30 am	M-Th	3	Area II, HV, AE	Mario Aste
Civil Engineering Technology	15.420-021	Solid Waste Management	7:00-10:00 pm	M/W	3	P: Jr. status or instructor permission	Nihar Mohanty
	CERTIFICATE IN ENVIRONMENTAL TECHNOLOGY (See page 18 for required courses.)						
	CERTIFICATE IN LAND SURVEYING (See page 18 for required courses.)						
Civil Engineering Technology Water/Waste-Water Option	15.154-021	Water Biology II	7:00-10:00 pm	T/Th	3	P: 15.152	Therese Champigny
	86.132-021	Environmental Chemistry II	7:00-10:00 pm	M/W	3	P: 86.131, SC	Charles Panagiotakos
	CERTIFICATE IN WATER TREATMENT (See page 20 for required courses.)						
	CERTIFICATE IN WASTEWATER TREATMENT (See page 19 for required courses.)						
Computer Mathematics (see also Computer Science and Art/Computer Graphics)	90.171-021	Access	6:00-9:00 pm	M/W	3		Susan L'Italien
	90.230-021	Intro. to Multimedia/Windows	7:00-10:00 pm	M/W	3		Chris Perry
	90.231-021	Graphics for Multimedia/Mac	7:00-10:00 pm	T/Th	3	P: 90.230	H. Wideman-Arnold
	90.232-021	Desktop Video Production/Windows	7:00-10:00 pm	T/Th	3	P: 90.230	Beatrice Lee
	90.233-021	Multimedia Authoring Software Using Macromedia's Director/Mac	7:00-10:00 pm	M/W	3	P: 90.230	Beatrice Lee
	90.462-021	Network Architecture and TCP/IP	7:00-10:00 pm	M/W	3	P: 90.461	Anthony Forgetta
	90.463-021	Advanced Network Technology	7:00-10:00 pm	T/Th	3	P: 90.462	Alan Wu
	92.202-021	Intro. to PCs & MS Office	6:00-9:00 pm	M/W	3		Robin Desmond
	92.202-022	Intro. to PCs & MS Office	7:00-10:00 pm	T/Th	3		Susan L'Italien
	92.211-021*	Intro. to Programming with C	7:00-10:00 pm	M/W	3	P: 92.121 or equivalent	James Brzowski
	92.211-022*	Intro. to Programming with C	7:00-10:00 pm	T/Th	3	P: 92.121 or equivalent	Department Faculty
	92.212-021	Intro. to Programming with C II	9:45-11:45 am	M-Th	3	P: 92.211	Sean McGowan
	92.220-021	Visual Basic	7:00-10:00 pm	T/Th	3		Arthur Chadbourne
	92.220-022	Visual Basic	7:00-10:00 pm	M/W	3		Department Faculty
	92.267-021*	C Programming	Noon-2:00 pm	M-Th	3	P: previous programming experience	Department Faculty
	92.267-022*	C Programming	6:00-9:00 pm	M/W	3	P: previous programming experience	Marvin Stick
	92.267-023*	C Programming	7:00-10:00 pm	T/Th	3	P: previous programming experience	Leroy Clark
	92.267-024*	C Programming	6:00-9:00 pm	T/Th	3	P: previous programming experience	Department Faculty
	92.268-021	C++ Programming	7:00-10:00 pm	M/W	3	P: 92.267 or 92.212	Department Faculty
	92.268-022	C++ Programming	7:00-10:00 pm	M/W	3	P: 92.267 or 92.212	Department Faculty
	92.268-023	C++ Programming	7:00-10:00 pm	T/Th	3	P: 92.267 or 92.212	Daniel Leach
	92.270-021	Visual C++	7:00-10:00 pm	M/W	3	P: 92.268	Department Faculty
	92.270-022	Visual C++	7:00-10:00 pm	T/Th	3	P: 92.268	Department Faculty
	92.311-021	Intro. to UNIX Operating System	7:00-10:00 pm	M/W	3		Department Faculty
	92.312-022	UNIX Shell Programming	7:00-10:00 pm	M/W	3	P: 92.311	Department Faculty
*Students may not receive credit for both 92.211 and 92.267.							
CERTIFICATE IN COMPUTER PROFICIENCY (See page 17 for required courses.)							
CERTIFICATE IN DATA/TELECOMMUNICATIONS (See page 17 for required courses.)							
CERTIFICATE IN UNIX (See page 19 for required courses.)							
CERTIFICATE IN MULTIMEDIA APPLICATIONS (See page 20 for required courses.)							
CERTIFICATE IN INTERNET SYSTEMS ADMINISTRATION (See page 18 for required courses.)							
CERTIFICATE IN WINDOWS DEVELOPMENT PROGRAMMING (See page 20 for required courses.)							
(Also see listings under Summer I for CyberEd courses being offered in a 14-week format.)							
Computer Science (see also Computer Mathematics)	91.113-021	Exploring the Internet	9:45-11:45 am	M-Th	3		Department Faculty
	91.113-022	Exploring the Internet	7:00-10:00 pm	M/W	3		Department Faculty
	91.113-023	Exploring the Internet	7:00-10:00 pm	T/Th	3		Marjan Trutschl
	91.353-021	Windows Programming for Internet Systems	7:00-10:00 pm	T/Th	3		Department Faculty
	91.371-021	Internet Systems Administration	7:00-10:00 pm	M/W	3	P: 92.311	Department Faculty
	91.372-021	Managing Internet Info. Services	7:00-10:00 pm	T/Th	3	P: 92.311	Department Faculty
(See listings under Computer Science in Summer I for additional 14-week offerings.)							
Criminal Justice (see also Paralegal Studies)	44.234-021	Criminal Law	7:30-9:30 am	M-Th	3		Anthony Petrosino
	44.261-021	Juvenile Delinquency	7:00-10:00 pm	T/Th	3		Joseph Burke
	44.312-021	Security Management	7:00-10:00 pm	T/Th	3		John Pignato
	44.496-021	Criminal Justice Practicum	TBA	TBA	3	P: Instructor permission	Gerald Hotaling
Economics	49.201-021	Economics I (Microeconomics)	9:45-11:45 am	M-Th	3	Area I, BS	Albert Cederlund
	49.201-022	Economics I (Microeconomics)	7:00-10:00 pm	M/W	3	Area I, BS	Department Faculty
	49.202-021	Economics II (Macroeconomics)	9:45-11:45 am	M-Th	3	Area I, BS	Michael Carter
	49.202-022	Economics II (Macroeconomics)	7:00-10:00 pm	T/Th	3	Area I, BS	Department Faculty
	49.211-021	Statistics I	7:30-9:30 am	M-Th	3	P: 92.122 or equivalent	Department Faculty
	49.212-021	Statistics II	7:00-10:00 pm	T/Th	3	P: 49.211	Department Faculty
Electrical Engineering	16.202-021	Circuit Theory II (7/14-8/19/98)	7:00-9:00 pm	T-F	3	P: 16.201, 95.245; C: 16.208	Stephen Spurk
	16.211-021	Fundamentals of Electricity	7:00-10:00 pm	T/Th	3	P: 92.132, 95.144	A.J. Noushin
	16.212-021	Fundamentals of Electricity Laboratory	TBA	TBA	1 (3)	C: 16.211 unless lab already passed	Alan Rux
	16.409-021	Project Laboratory	TBA	TBA	3	P: Department Faculty permission	Ziyad Salameh
	16.491-021	Industrial Experience	TBA	TBA	3	P: Permission by Alan Rux	Alan Rux
	16.492-021	Industrial Experience	TBA	TBA	3	P: Permission by Alan Rux	Alan Rux
	16.493-021	Industrial Experience	TBA	TBA	3	P: Permission by Alan Rux	Alan Rux
English	42.101-021	College Writing I	7:30-9:30 am	M-Th	3		Department Faculty
	42.101-022	College Writing I	7:00-10:00 pm	M/W	3		Department Faculty
	42.102-021	College Writing II	9:45-11:45 am	M-Th	3	P: 42.101	William Hersey
	42.102-022	College Writing II	7:00-10:00 pm	T/Th	3	P: 42.101	Department Faculty
	42.104-021	College Writing II for Internatnl. Students	7:00-10:00 pm	M/W	3	P: 42.103	Department Faculty
	42.212-021	The Short Story	7:00-10:00 pm	M/W	3	P: 42.102, Area II, LT	Henry Venuti
	42.217-021	The Horror Story	9:45-11:45 am	M-Th	3	P: 42.102, Area II, LT	Henry Venuti

Academic Credit Course Listing

42.220-021	Personal and Reflective Writing	7:00-10:00 pm	M/W	3	P: 42.102	J. Dickerman-Nelson
42.224-022	Business Writing	7:00-10:00 pm	M/W	3	P: 42.102	Rosalie Ryan
42.232-021	Fiction into Film	9:45-11:45 am	M-Th	3	P: 42.102, LT	Barbara Miliaras
42.282-021	Crime in Literature	7:30-9:30 am	M-Th	3	P: 42.102, LT	William Hersey
42.295-021	History of American Literature II	7:00-10:00 pm	T/Th	3	P: 42.102, Area II, LT	G. DiGeronimo
42.300-021	Journalism	7:00-10:00 pm	M/W	3	P: 42.102	Robert Kachur
42.356-021	Literature of the Victorian Period	7:30-9:30 am	M-Th	3	P: 42.102, LT	Barbara Miliaras

Environmental Technology	15.420-021	Solid Waste Management	7:00-10:00 pm	M/W	3	P: Junior status or instructor perm.	Nihar Mohanty
CERTIFICATE IN ENVIRONMENTAL TECHNOLOGY (See page 18 for required courses.) (See offerings under Civil Engineering Technology, Chemistry, Environmental Sciences, Political Science, and Water/Wastewater Option.)							

Finance	61.431-021*	Capital Planning	6:00-9:00 pm	T/Th	3	P: 61.301, BSBA students	Michael Rouse
*Restricted to BSBA Program or by College of Management permission.							

Health Professions	30.305-021	Exercise Physiology Lecture	9:45-11:45 am	M-F	4	P: Anatomy & Physiology, Chem., SL	Brian Don
	30.309-021	Exercise Physiology Lab	1:00-4:00 pm	M/T/Th	1 (3)	C: 30.305, SL	Brian Don
	35.102-021	Human Anatomy and Physiology II	9:45-11:45 am	M-Th	3	P: 35.101; C: 35.104, SL	Christopher Rowse
	35.104-021	Human A. & P. II Lab	1:00-4:00 pm	T/W/Th	1 (3)	P: 35.103; C: 35.102, SL	Alease Bruce

History	43.112-021	U.S. History Since 1877	9:45-11:45 am	M-Th	3	Area II, HS	Department Faculty
	43.202-021	Science and the Modern World	6:00-9:00 pm	M/W	3	Area II, HS	Alice Walters
	43.242-021	The Second World War	7:00-10:00 pm	M/W	3	Area II, HS	Donald Mattheisen
	43.356-021	Civil War and Reconstruction	7:00-10:00 pm	T/Th	3	Area II, HS	Pamela Edwards

Industrial Technology	(See separate listings under Manufacturing, Plastics, and Water/Wastewater Option.)						
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Languages	50.212-021	Intermediate Conversational French II	7:00-10:00 pm	T/Th	3	P: 50.211 or equivalent, Area II	Roger Lacerte
	51.212-021	Intermediate German II	7:00-10:00 pm	T/Th	3	P: 51.211, Area II	Department Faculty
	51.491-021	Twentieth Century German Literature	6:00-9:00 pm	T/Th	3		Robert Whelan
	52.374-021	Classics of Italian Cinema	9:45-11:45 am	M-Th	3	Area II, VC, AE	Mario Aste
	52.380-021	Italian Cinema: Directors and Themes	7:30-9:30 am	M-Th	3	Area II, VC, AE	Mario Aste
	53.102-021	Beginning Japanese II	7:00-10:00 pm	T/Th	3	P: 53.101	Department Faculty
	54.102-021	Beginning Spanish II	7:30-9:30 am	M-Th	3	P: 54.101 or equivalent	J. Heli Hernandez
	54.102-022	Beginning Spanish II	7:00-10:00 pm	M/W	3	P: 54.101 or equivalent	Department Faculty
	54.212-021	Intermediate Conversational Spanish II	9:45-11:45 am	M-Th	3	P: 54.211 or equivalent, Area II	J. Heli Hernandez
	54.212-022	Intermediate Conversational Spanish II	7:00-10:00 pm	T/Th	3	P: 54.211 or equivalent, Area II	Department Faculty

Legal Studies (see also Paralegal Studies)	41.262-021	Introduction to Business Law	7:00-10:00 pm	M/W	3	BS, Collateral Criminal Justice	Eugene Reardon
	41.363-021	Corporate and Property Law	7:00-10:00 pm	T/Th	3		Eugene Reardon
	41.365-021	The Legal Environment of Business	7:00-10:00 pm	M/W	3	Human Values	James Gaffney
	41.370-021	Real Estate Law	7:00-10:00 pm	M/W	3		J. Alan Roberts
	41.376-021	Family Law	7:00-10:00 pm	M/W	3		Russell Karl
	41.381-021	Women and the Law	9:45-11:45 am	M-Th	3		Nancy Dick
	41.387-021	Legal Research Methods	7:00-10:00 pm	T/Th	3		Nancy Dick

Management	69.251-021	Personnel Management	7:00-10:00 pm	T/Th	3		P. G. Zicari
	69.253-021	Intro. to Mgmt. and Org. Behavior	7:00-10:00 pm	T/Th	3		Sharron Lovins
	69.276-021	Entrepreneurial Management	7:00-10:00 pm	T/Th	3		Mel Epstein
NOTE: Courses with the 69 prefix are not intended for students matriculating in the Bachelor of Science degree programs in the College of Management. CERTIFICATE IN PURCHASING MANAGEMENT (See page 19 for required courses.)							

Manufacturing Option	(See Mechanical Engineering Technology.) CERTIFICATE IN MANUFACTURING TECHNOLOGY (See page 18 for required courses.)						
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Mathematics (see also Computer Mathematics)	90.111-021*	Fundamentals of Algebra	7:00-10:00 pm	M/W	3		Eugene Welch, Jr.
	92.111-021	Mathematical Perspectives	9:45-11:45 am	M-Th	3	Liberal Arts majors only, Area III, MA	Alan Kaplan
	92.121-021**	Precalculus Mathematics I	7:30-9:30 am	M-Th	3	Area III, MA	Marvin Stick
	92.121-022**	Precalculus Mathematics I	7:00-10:00 pm	M/W	3	P: 90.111 or placement exam, *** Area III, MA	Terrence Watterson
	92.122-021	Management Calculus	9:45-11:45 am	M-Th	3	P: 92.121, Area III, MA	Alexander Olsen
	92.123-021	Precalculus Mathematics II	7:00-10:00 pm	T/Th	3	P: 92.121, MA	Candice Weston
	92.125-021	Calculus A	7:00-10:00 pm	M/W	3	P: 92.123 (previously 92.115), MA	Robert Gravina
	92.126-021	Calculus B	7:00-10:00 pm	M/W	3	P: 92.125, MA	Theresa Schille
	92.128-021	Calculus IB	9:45-11:45 am	M-F	4	P: 92.127, MA	Department Faculty
	92.131-021	Calculus I	9:45-11:45 am	M-F	4	MA	Marvin Stick
	92.132-021	Calculus II	7:30-9:30 am	M-F	4	P: 92.131, MA	Alan Kaplan
	92.132-022	Calculus II	9:45-11:45 am	M-F	4	P: 92.131, MA	James Graham-Eagle
	92.132-023	Calculus II	Noon-2:00 pm	M-F	4	P: 92.131, MA	Ronald Brent
	92.183-021	Introduction to Statistics	7:30-9:30 am	M-Th	3	P: 90.111 or equivalent, Area III, MA	Alexander Olsen
	92.183-022	Introduction to Statistics	7:00-10:00 pm	M/W	3	P: 90.111 or equivalent, Area III, MA	Department Faculty
	92.225-021	Calculus C	7:00-10:00 pm	M/W	3	P: 92.126, MA	Philip Breen
	92.226-021	Calculus D	7:00-10:00 pm	M/W	3	P: 92.225, MA	Ronald Brent
	92.231-021	Calculus III	9:45-11:45 am	M-F	4	P: 92.132, MA	Ashot Shahinian
	92.234-021	Differential Equations	7:00-10:00 pm	T/Th	3	P: 92.132 or 92.225, MA	Robert Johnson
	92.321-021	Discrete Structures I	7:00-10:00 pm	M/W	3	P: 90.112 or 92.121	Anthony Penta
	92.386-021	Statistics for Science and Engineering	7:00-10:00 pm	M/W	3	P: 92.226 or 92.132	Lee Jones
NEW!	92.417-021	Topics in Pattern Recognition and Neural Networks II	TBA	TBA	3	P: 92.416/516	Lee Jones
	92.435-021	History of Mathematics	6:00-9:00 pm	M/W	3		Joyce Williams
	92.450-021	Mathematical Modeling	5:30-8:30 pm	T/Th	3	P: 92.234	James Graham-Eagle
	92.485-021	Queueing Theory	6:00-9:00 pm	T/Th	3	P: 92.307 or 92.386 with permission	Mark Yin

*Fundamentals of Algebra (90.111) is a preparatory course and cannot be credited toward a degree program at the University of Massachusetts Lowell.
 **Students may not receive credit for both 90.112 and 92.121.
 ***Placement exam is given the first evening of class.
 Many 500-level courses are well within the grasp of upper level undergraduates and may be used as electives. Refer to the Graduate School listing and contact the Graduate School for admissions procedures. University of Massachusetts Lowell Day students must have approval from the Mathematics Coordinator before taking courses with a 90 prefix.

Mechanical Engineering	22.212-021	Mechanics of Materials	7:30-9:30 am	M-Th	3	P: 22.211, 92.132	Department Faculty
	22.242-021	Thermodynamics	7:30-9:30 am	M-Th	3	P: 92.132, 95.245	Yakov Zilberberg
	22.381-021	Fluid Mechanics	9:45-11:45 am	M-Th	3	P: 22.212, 22.242, 92.231, 92.234	Department Faculty

Mechanical Engineering Technology	23.102-021	Engineering Design and Graphics	7:00-10:00 pm	T/Th	3	P: 23.101	Bradley Mingels
	23.222-021	Dynamics	7:00-10:00 pm	M/W	3	P: 92.126, 23.221	Marilynn Keppler
	23.243-021	Elements of Thermodynamics II	7:00-10:00 pm	T/Th	3	P: 23.241	Vernon Oliver
CERTIFICATE IN MANUFACTURING TECHNOLOGY (See page 18 for required courses.)							

Multimedia Applications	See Computer Mathematics Option and Computer Science						
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Music	71.100-021	Fundamentals of Musicianship	7:30-9:30 am	M-Th	3	Music majors only	Mark Peterson
	71.101-021	Music Theory I	7:30-9:30 am	M-Th	3	Music majors only	Lisa Cleveland
	71.110-021	Basic Music Theory	7:00-10:00 pm	M/W	3	Non-Music majors, Area II, AE	Department Faculty
	71.202-021	Music Theory IV	9:45-11:45 am	M-Th	3	P: 71.201, Music majors only	Mark Peterson
	71.204-021	Solfège IV	9:45-11:45 am	M-Th	3	P: 71.203	Lisa Cleveland
For Summer Music Education Program, see page 16.							

Academic Credit Course Listing

Paralegal (see also Legal Studies and Criminal Justice)	41.363-021	Corporate and Property Law	7:00-10:00 pm	T/Th	3		Eugene Reardon
	41.370-021	Real Estate Law	7:00-10:00 pm	M/W	3		J. Alan Roberts
	41.387-021	Legal Research Methods	7:00-10:00 pm	T/Th	3		Nancy Dick
	CERTIFICATE IN PARALEGAL STUDIES (See page 19 for required courses.)						
Philosophy	45.201-021	Introduction to Philosophy	9:45-11:45 am	M-Th	3	Area II and VC	Elizabeth Gleason
	45.201-022	Introduction to Philosophy	7:00-10:00 pm	M/W	3	Area II and VC	Donald LeBlanc
	45.203-021	Introduction to Ethics	7:00-10:00 pm	T/Th	3	Area II and VC	Michael Koran
Physics	95.104-021	General Physics II	7:30-9:30 am	M-Th	3	P: 95.103; C: 96.104, SL	Roger McLeod
	95.121-021	Exploring the Universe	7:30-9:30 am	M-Th	3	Area III, SC	Paul Ring
	95.141-021	Physics I	9:45-11:45 am	M-F	3 (4)	P: 92.131, C: 92.141, SL	Paul Ring
	95.144-021	Physics II	9:45-11:45 am	M-F	3 (4)	P: 95.141, 92.132, C: 96.144, SL	Roger McLeod
	96.104-021	Experimental General Physics II (2 days per week)	2:15-5:15 pm	T/Th	1 (1.5)	C: 95.104, SL	Department Faculty
	96.141-021	Experimental Physics I (2 days per week)	2:15-5:15 pm	M/W	1 (1.5)	C: 95.141, SL	Department Faculty
	96.144-021	Experimental Physics II (2 days per week)	2:15-5:15 pm	T/Th	1 (1.5)	P: 96.141; C: 95.144, SL	David Pullen
	99.101-021	Radiation and Life	9:45-11:45 am	M-Th	3	C: 99.102, Area III, SL	Department Faculty
	99.102-021	Radiation and Life Lab	TBA	TBA	1 (2)	C: 99.101, Area III, SL	Department Faculty
Plastics	27.452-021	Selected Topics II	7:00-10:00 pm	M/W	3	P: Coordinator permission	Department Faculty
	27.454-021	Selected Topics IV	7:00-10:00 pm	T/Th	3	P: Coordinator permission	Department Faculty
	Courses with the 27 prefix are not eligible for graduate credit. CERTIFICATE IN PLASTICS ENGINEERING TECHNOLOGY (See page 19 for required courses.)						
Political Science	46.101-021	Introduction to American Politics	7:30-9:30 am	M-Th	3	Area I, BS	Department Faculty
	46.121-021	Introduction to International Relations	7:00-10:00 pm	M/W	3	Area I, BS	Paula McCabe
Psychology	47.101-021	General Psychology	7:30-9:30 am	M-Th	3	Area I, BS	Department Faculty
	47.101-022	General Psychology	7:00-10:00 pm	M/W	3	Area I, BS	Daryl Graves
	47.209-021	Social Psychology	7:30-9:30 am	M-Th	3	Area I, Human Values, BS	Kevin Callahan
	47.232-021	Psychology of Personality	9:45-11:45 am	M-Th	3	P: 47.101, Area I, BS	Jean Sanders
	47.272-021	Abnormal Psychology	6:00-9:00 pm	T/Th	3	P: 47.101, Area I, BS	John Bayliss
	47.335-021	Psychology and Women	7:00-10:00 pm	M/W	3	Area I, Human Values	Charlene Drake
Radiological Sciences	(See Physics.)						
Sociology	48.101-021	Introduction to Sociology	7:30-9:30 am	M-Th	3	Area I, BS	Levon Chorbajian
	48.101-022	Introduction to Sociology	7:00-10:00 pm	T/Th	3	Area I, BS	Levon Chorbajian
	48.220-021	Self-Assessment and Career Development	6:00-9:00 pm	M/W	3	P: 48.101, BS	Leonard Harlow
Water/ Wastewater Technology Option	(See Civil Engineering Technology: Water/Wastewater Option.)						

REMINDER: IT IS IMPORTANT TO CHECK COURSE NUMBERS AND PREREQUISITES TO ENSURE ENROLLMENT IN THE CORRECT CLASS.

Summer Session I GRADUATE COURSES

Except as noted: Day classes begin on May 26.
M/W Evening Classes begin on May 27 and include 3 Fridays: May 29, June 12, June 26.
T/Th Evening Classes begin on May 26 and include 2 Fridays: June 5, June 19.

	No.	Title	Time	Days	Cr	P: Prerequisite/Corequisite/Other	Instructor
Business Administration	Students must be enrolled in the UML MBA Program; all other MBA students need permission of the Director.						
	60.504-011	Advanced Managerial Accounting	TBA	TBA	1	P: Instructor permission	Norma Powell
	61.688-011	Special Topics: Financial Markets/ Monetary Policy	6:00-9:00 pm	T/Th	3		Michael Carter
	61.802-011	Quantitative Methods for Decision Making	6:00-9:00 pm	M/W	3	P: MMS or LCST cert. students only	Department Faculty
	66.688-011	Special Topics: Labor and Diversity	6:00-9:00 pm	T/Th	3		B. Hargreaves-Heald
	66.691-011	Strategy	6:00-9:00 pm	M/W	3		Valerie Kijewski
Computer Science	66.725-011	Negotiations/Sales/Infl. Process	6:00-9:00 pm	M/W	3		Timm Kainen
	91.550-021	Topics: Computational A.I. in Finance (14 weeks)	6:00-9:00 pm	W	3		Richard Holmes
	91.550-022	Topics: Intelligent Industrial Systems (14 weeks)	6:00-9:00 pm	Th	3		Himanshu Bhatnagar
	91.550-023	Topics: Speech Recognition II (14 weeks)	6:00-9:00 pm	TBA	3		Jerome Braun
Criminal Justice	91.502-021	Foundations of CS (14 weeks)	6:00-9:00 pm	Th	3	P: 91.500	Charles Steele
	44.622-011	Family Violence	6:00-9:00 pm	M/W	3		Eve Buzawa
	44.691-011	Graduate Directed Study	TBA	TBA	3	P: Instructor permission	Gerald Hotaling
Electrical Engineering	44.733-011	Graduate Project	TBA	TBA	3	P: Graduate students only	Gerald Hotaling
	16.528-011	Alternate Energy Sources (6 weeks)	6:00-9:00 pm	M/W	3	P: Instructor permission	Ziyad Salameh
	16.529-011	Special Topics: Electric Vehicle Technology (6 weeks)	6:00-9:00 pm	T/Th	3	P: Instructor permission	Ziyad Salameh
	16.575-021*	FPGA Logic Design Techniques	6:00-8:00 pm	T/Th	3	P: 16.265	James Moran
	16.576-021*	Fuzzy Systems Theory and Applications	6:00-8:00 pm	M/W	3		Syama Chaudhuri
	16.699-021*	Research Topics in Electrical and Computer	6:00-8:00 pm	M/W	3	P: >15 graduate credits	David Wade
	16.725-021*	Digital Speech Processing	6:00-8:00 pm	M/W	3	P: 16.362	Khanh Luong
*Note: Nine-week Electrical and Computer Engineering courses begin Tuesday, May 26 or Wednesday, May 27, with final exams on the last course meeting on Wednesday, July 29 or Thursday, July 30.							
Environmental	85.574-011	Air Quality Modeling	7:00-10:00 pm	M/W			Stephen Zemba
Health Professions	34.615-011	Clinical Education I	8:00 am-5:00 pm	M-F	2 (4)	P: First-year Physical Therapy Graduate students only	Lisa Falvo/ Susan Bergmeier/ Constance Seymour/ Gerard Dybel

Mathematics	92.500-011	Discrete Structures	3:30-6:30 pm	T/Th	3		Alan Doerr
	92.510-021	Computers in the Classroom (14 weeks)	CyberEd/On-Line Course		3	Requires Mathematica software	Kenneth Levasseur
	92.516-011	Pattern Recognition & Neural Networks	6:30-9:30 pm	M/W	3	P: 92.386/Linear Algebra or equivalent	Lee Jones
	92.520-011	Mathematical Problem Solving	6:00-9:00 pm	T/Th	3	P: 92.226 or 92.231 or equivalent	Joseph Spadano
	92.521-011	Algebraic Structures I	9:45-11:45 am	M-Th	3	P: 92.221 or 92.321	Alan Doerr
	92.530-011	Applied Mathematics I	5:30-8:30 pm	T/Th	3	P: 92.234	James Graham-Eagle
	92.580-011	Combinatorics	5:30-8:30 pm	M/W	3	P: Calc. & Discrete Struct. or equivalent	Mark Yin
	92.653-011	Selected Topics/Chaos Theory	3:30-6:30 pm	T/Th	3	P: 92.231 or equivalent	Raj Prasad
Music	For Summer Music Education Programs, see page 16.						
Plastics	26.500-011	Advanced Projects Plastics (Non lab)	TBA	TBA	3	P: Instructor permission	Rudolph Deanin
	26.500-012	Advanced Projects Plastics (Lab)	TBA	TBA	3	P: Instructor permission	Rudolph Deanin
	26.538-011	Selected Topics: Plastics	TBA	TBA	3	P: Instructor permission	Rudolph Deanin
	26.567-011	Dynamic Mechanical Properties I	TBA	TBA	3	P: Instructor permission	Stephen Driscoll
Psychology	47.531-011	Substance Abuse	6:00-9:00 pm	T/Th	3		Richard Siegel
	47.542-011	Psychopathology and Mental Health	6:00-9:00 pm	M/W	3		Peter Hantzis
Radiological Science	98.681-011	Graduate Medical Physics	TBA	TBA	3		Department Faculty
	98.687-011	Graduate Medical Physics Internship	TBA	TBA	3		Department Faculty
	98.697-011	Adv. Graduate Medical Physics Internship	TBA	TBA	3		Department Faculty

Summer Session II
GRADUATE COURSES

Except as noted: Day Classes begin on July 13.
M/W Evening Classes begin on July 13 and include 2 Fridays: July 17, July 31.
T/Th Evening Classes begin on July 14 and include 2 Fridays: July 24, August 7.

	No.	Title	Time	Days	Cr(Co)	P: Prerequisite/Corequisite/Other	Instructor
Business Administration	Students must be enrolled in the UML MBA Program; all other MBA students need permission of the Director.						
	62.660-021	Marketing Communications	6:00-9:00 pm	T/Th	3		Kenneth Parker
Computer Science	(See listings under Summer I for 14-week offerings.)						
Criminal Justice	44.691-021	Graduate Directed Study	TBA	TBA	3	P: Instructor permission	Gerald Hotaling
	44.733-021	Graduate Project	TBA	TBA	3	P: Graduate students only	Gerald Hotaling
Electrical Engineering	(See listings under Summer I for 9-week offerings.)						
Health Professions	34.634-021	Clinical Education Experience II	8:00-5:00 pm	M-F	2 (4)	P: Clinical Education Experience I, Second-year Physical Therapy graduate students only	S. O'Sullivan/L. Falvo/ L. Kahn-D'Angelo Department Faculty
	34.646-021	Musculoskeletal Evaluation of Spine I	4:00-7:00 pm	T/Th	3		
Mathematics	92.504-021	Mathematics of Change for Elementary and Middle School Teachers	TBA	M/W	3	P: Math graduate program credit permission of Coordinator only	Joseph Spadano
	NEW! 92.517-021	Topics in Pattern Recognition and Neural Networks	TBA	TBA	3	P: 92.416/92.516	Lee Jones
	92.523-021	Linear Algebra	3:30-6:30 pm	M/W	3		Department Faculty
	NEW! 92.531-021	Applied Mathematics II	5:30-8:00 pm	M/W	3	P: 92.530	J. Graham-Eagle
	92.535-021	History of Mathematics	6:00-9:00 pm	T/Th	3		Joyce Williams
	NEW! 92.550-021	Mathematical Modeling	5:30-8:00 pm	T/Th	3	P: 92.234	J. Graham-Eagle
	92.585-021	Queueing Theory	6:00-9:00 pm	T/Th	3		Mark Yin
Music	For Summer Music Education Programs, see page 16.						
Plastics	26.500-021	Advanced Projects Plastics (Non lab)	TBA	TBA	3	P: Instructor permission	Rudolph Deanin
	26.500-022	Advanced Projects Plastics (Lab)	TBA	TBA	3	P: Instructor permission	Rudolph Deanin
	26.539-021	Selected Topics: Plastics	TBA	TBA	3	P: Instructor permission	Rudolph Deanin
	26.568-021	Dynamic Mechanical Properties II	TBA	TBA	3	P: Instructor permission	Stephen Driscoll
Psychology	47.504-021	The Family System	6:00-9:00 pm	M/W	3		Jerry Schwartz
	47.551-021	Psychosocial Aspects of Aging	6:00-9:00 pm	T/Th	3		Kevin Callahan
	47.623-021	Intervention/Child/Adolescent	6:00-9:00 pm	T/Th	3		Elizabeth Murphy
Radiological Sciences	98.687-021	Graduate Medical Physics Internship	TBA	TBA	3		Department Faculty
	98.697-021	Adv. Graduate Medical Physics Internship	TBA	TBA	3		Department Faculty

Mathematics Institute for Teachers

What makes UMass Lowell's mathematics courses for teachers different from those offered by other universities? We offer mathematics 3-credit content courses applicable to our Masters of Science degree in Mathematics (Teacher option).

Note: Students who wish to apply for any master's degree at UMass Lowell must do so prior to the beginning of their fifth graduate course.

- Summer I Graduate Courses
- 92.500 Discrete Structures
 - 92.510 Computers in the Classroom
 - 92.520 Mathematical Problem Solving
 - 92.521 Algebraic Structures I

- Summer II Graduate Courses
- 92.504 Mathematics of Change for Elementary and Middle School Teachers
 - 92.523 Linear Algebra
 - 92.535 History of Mathematics

Contact person: Alan Doerr (978) 934-2415 email: Alan_Doerr@uml.edu

If you have any questions regarding the Community Education Noncredit Courses, please call Continuing Education at (978) 934-4996 or fax to (978) 934-3087.

See registration dates and procedures on page 3.

Tuition and Fees

The tuition is indicated after each course description. In addition to the tuition, certain courses require the purchase of materials and equipment. Every effort is made to keep these additional expenses to a minimum.

Senior Citizen Waivers

Participants who are 60 and older may register for a Community Education course on a "space available" basis without payment of tuition charges. There may be a charge for class materials or texts.

PLEASE NOTE: Courses marked with an asterisk (*) are not eligible for tuition waivers for senior citizens, state employees, etc.

ART, HOME, DESIGN & CRAFTS

Basic Drawing Techniques: From Still Life to Human Figure [00.101-011]

Instructor: David Lowrey

The class will cover a variety of drawing assignments from still life to figures using different drawing media.

Tues: 7:00-9:30 pm—6 wks—Begins May 26
Tuition: \$100.00

Portrait Drawing/Painting [00.103-011]

Instructor: David Lowrey

This course covers the techniques of drawing and painting the human face in pastels or oils. Model used. First class is a demonstration.

Mon: 7:00-9:30 pm—6 wks—Begins June 1
Tuition: \$100.00

Watercolor Basics [00.164-011]

Instructor: Arthur Ketchen

This course is geared toward the beginner painter and offers a fundamental knowledge of watercolor painting. Instructor will provide list of needed supplies at first class meeting. Model used.

Sat: 9:00-11:00 am—4 wks—Begins May 30
Tuition: \$75.00

NEW! Pen & Ink with Watercolor (Intermediate) [00.183-011]

Instructor: Cynthia Van Horne Ehrlich

Learn to use materials, from technical pens to paint brushes, colored inks to liquid acrylics to discover ways to blot, spatter, stamp and otherwise alter and combine ink and watercolor for exciting texture effects. Materials list will be available at first class.

Wed: 6:30-9:30 pm—6 wks—Begins May 27
Tuition: \$100.00

Introduction to Antiques and Collectibles [00.138-011]

Instructor: Glenn Erardi

For beginners—an overview of antiques and collectibles. What makes a collection? Why collect antiques? How to trace the history of an item. Help in hunting the elusive antique. Learn how to bargain. How does an auction work? Participants are invited to bring in 1-2 small objects for discussion.

Sat: 1:00-4:00 pm—1 day—June 13
Tuition: \$60.00

Calligraphy [00.112-011]

Instructor: Sr. Cecile Duquette, s.c.o.

Students explore the chancery cursive or italics, the uncial and the Gothic styles as used in greeting cards, quotes, diplomas, awards and certificates. Students may purchase supplies in class on the first night.

Tues: 5:30-7:30 pm—6 wks—Begins May 26
Tuition: \$75.00

MUSIC, LITERATURE & HISTORY

The Art of Writing Children's Books [00.216-011]

Instructor: Robin Hansen-Cole

This is a study of the entire process, idea to submission to publisher of a polished book dummy. Use of AOL and the Web will be discussed. Instructor is published author and illustrator. All levels welcome.

Thurs: 6:00-9:00 pm—6 wks—Begins May 28

Tuition: \$105.00

The Art of Illustrating Children's Books [00.217-011]

Instructor: Robin Hansen-Cole

This course teaches all aspects of children's book creations, focusing on design and illustration. Bring drawing materials.

Tues: 6:00-9:00 pm—6 wks—Begins May 26
Tuition: \$105.00

Creative Writing Workshop (00.269-011)

Instructor: M. Frost Delaney

This class will focus on workshoping your writing. Students will bring copies of their work to be read outside class and reviewed in class. Both fiction and non-fiction welcome. Bring a one-page sample of work to first class.

Mon: 6:30-9:00 pm—6 wks—Begins June 1
Tuition: \$100.00

Getting Your Short Story or Article Published [00.281-011]

Instructor: Glenn Erardi

Target the correct market for your writing. Learn a good cover letter. Class covers the importance of: tracking a submission, writing tools, employing illustrations and photos. Contracts and agreements, copyrights and rights simplified. Students are encouraged to bring their work in and will be assisted in submitting it for publication.

Thurs: 6:30-8:30 pm—3 wks—Begins June 11
Tuition: \$70.00

NEW! Women in Celtic Music [00.207-011]

Instructor: Joanne Gagnon-Ketchen

Female singers and instrumentalists play a major role in the current Celtic music scene. This course will cover women in Celtic music from historical times to the present.

Tues: 6:30-8:30 pm—3 wks—Begins May 26
Tuition: \$65.00

ESL, LANGUAGE & CULTURE

Spanish for the Health Professional [00.373-011]

Instructor: Lisa Clough

This course, designed for beginners, is intended to address communication techniques for health professionals.

Wed: 6:30-8:30 pm—6 wks—Begins May 27
Tuition: \$85.00

Conversational Spanish I [00.321-001]

Instructor: Jorge deVillasante

This course emphasizes useful, everyday Spanish conversation that is essential when traveling or working.

Wed: 5:30-7:30 pm—6 wks—Begins June 3
Tuition: \$85.00

Conversational Spanish II [00.322-011]

Instructor: Jorge deVillasante

A continuation of Conversational Spanish I, with additional emphasis on conversational skills.

Tues: 5:30-7:30 pm—6 wks—Begins June 2
Tuition: \$85.00

Beginning Conversational French [00.331-011]

Instructor: Emile Tabea

Designed for the beginner with little or no knowledge of the French language. This course takes a conversational approach emphasizing vocabulary, correct pronunciation, proper word order.

Sat: 11:00 am-1:00 pm—6 wks—Begins May 30
Tuition: \$85.00

Continuing Conversational French [00.332-011]

Instructor: Emile Tabea

A continuation of Beginning French, providing additional exposure to the French language.

Thurs: 7:00-9:00 pm—6 wks—Begins May 28
Tuition: \$85.00

Beginning Chinese (Mandarin) [00.359-011]

Instructor: Mei-Ling Diep

Basic grammar and pronunciation will be introduced in this course. Learn to recognize and write simple Chinese characters.

Tues/Thurs: 6:00-9:30 pm—6 weeks—Begins May 26
Tuition: \$145.00

Writing Program

42.302-011 Creative Writing: Fiction (3 credits)
Instructor: Jay Atkinson, fiction/non-fiction writer, author of the novel "Caveman Politics"

42.303-011 Creative Writing: Poetry (3 credits)
Instructor: Judith Dickerman-Nelson, poet and founder of the Lowell Review

42.304-011 Creative Writing: Screenwriting (3 credits)
Instructor: Richard Farrell, author, screenwriter, and award-winning HBO producer

Please see the course listings in this bulletin for the above course times, days, and prerequisites.

Summer Reading Series

Free and open to the public. Readings from faculty, published writers, and students

Location: O'Leary Library 222

Time: 7:00-8:00 pm

Wednesday, June 3: Faculty Readings

Thursday, June 11: Elizabeth Searle, author of "A Four-Sided Bed"

Wednesday, June 17:
Helena Milton, poet and author of "The Canal Bed" and Jeff Kelly, children's writer and author of "A Year's Worth of Trouble"

Thursday, June 24 Student readings

English as a Second Language for Beginners [00.350-011]

Instructor: Evelyn Dorosz

For those who are somewhat familiar with the English language. Course includes drilling in the basics of grammar, usage and vocabulary.

Tues: 5:30-7:30 pm—6 weeks—Begins May 26
Tuition: \$85.00

English as a Second Language for Intermediates [00.352-011]

Instructor: Rosemary Reppucci

Intended to help the student who has already acquired some knowledge of the English language. It is designed to further develop the mechanics of grammar and usage with emphasis on building a larger and more meaningful vocabulary.

Thurs: 5:30-7:30 pm—6 wks—Begins May 28
Tuition: \$85.00

English as a Second Language — Advanced [00.353-011]

Instructor: Sr. Cecile Duquette

Designed for students who have English grammar and usage skills at a verbal and written level equal to the 10th or 11th grade. Intense practice of vocabulary skills will be stressed.

Wed: 5:30-7:30 pm—6 wks—Begins May 27
Tuition: \$85.00

*English (American) Pronunciation for Foreign-Born Speakers I [00.354-011]

Instructor: Gailanne Desmond

For those who have a good command of the English language, but need accent reduction assistance. Students are encouraged to bring a tape recorder and blank cassettes to class.

Tues: 6:00-7:30 pm—6 wks—Begins May 26
Tuition: \$75.00

English as a Second Language — Vocabulary [00.357-011]

Instructor: Gailanne Desmond

This class is for the ESL intermediate and advanced student who wishes to improve his/her vocabulary. Individual writing skills will also be developed.

Sat: 8:30-10:30 am—6 wks—Begins May 30
Tuition: \$85.00

SELF-HELP

Assertive Presentation Skills [00.401-011]

Instructor: David Favreau, M.Ed., L.C.S.W.

This course will help you to develop and deliver assertive presentations through instruction in presentation preparation, assertive presentation styles, dealing with hostile audiences and your fears.

Weekly homework assignments. Note: This class can be used for CEUs/P.D.Ps for Educators.

Mon: 5:30-7:30 pm—5-wks—Begins June 1
Tuition: \$80.00

Assertive Training for Teachers [00.415-011]

Instructor: David Favreau, M.Ed., L.C.S.W.

This workshop is a skill building program for educators seeking to improve classroom presentation skills, pro-active problem solving, limit setting and to build a support network. Certificate of completion is given at end of 5 weeks. Note: This class can be used for CEUs or PDPs.

Wed: 5:30-7:30 pm—5-wks—Begins May 27
Tuition: \$80.00

COMMUNITY EDUCATION

PROFESSIONAL INSTITUTES



ENTREPRENEURSHIP INSTITUTE

Weekend Seminars!

If you have always wanted to start your own consulting firm, import/export firm, mail-order business or any self-supporting venture—now is the time to prepare yourself for the future!

Most of these workshops include a Harvard Business School Case Study (HBS). Others include extensive hand-outs. All of the seminars in the Entrepreneurship Institute are co-sponsored by the United States Small Business Administration.

For further information on these workshops, please call Cathy Kendrick at (978) 934-2495. To register for the workshops, call the Office of Enrollment Services at (978) 934-2700. All of the seminars are held at the Executive Conference Center in the historic Patrick Mogan Building in downtown Lowell.

*Entrepreneurship: Starting and Succeeding in Any Type of Business [See #s Below]

Instructor: Mel Epstein, President and founder of Business Strategies, a consulting firm in Cambridge, MA which assists individuals and companies in implementing successful business plans.

This seminar is for the person who is considering starting his or her own business. It covers the four key elements of a strategy for becoming a successful entrepreneur: choosing the business that is right for you, organizing, financing, and marketing. Includes answering legal and tax questions, record keeping, raising money, preparing a business plan, marketing, motivation, and selling. (HBS)
Section A: Sun: 10:00 am-6:00 pm—1 day—5/24/98—Course #: 00.001-011
Section B: Sun: 10:00 am-6:00 pm—1 day—7/19/98—Course #: 00.001-021
Tuition: \$95.00

*Starting Your Own Import-Export Business

[See #s Below]

Instructor: Mel Epstein

This seminar covers how to develop a complete import-export strategy: selecting products, identifying distributors, arranging transportation and payments, satisfying U.S. Customs requirements, and meeting export regulations. Includes how to locate overseas suppliers and buyers, and how to develop a strategy that will work for you. Each recipient will receive a 100-page pamphlet and Harvard Business School Case Study. (HBS)
Section A: Sat: 10:00 am-6:00 pm—1 day—5/23/98—Course #: 00.002-011
Section B: Sat: 10:00 am-6:00 pm—1 day—7/18/98—Course #: 00.002-021
Tuition: \$95.00

*Starting Your Own Consulting Practice [00.004-011]

Instructor: Mel Epstein

For those in any field interested in starting and succeeding in consulting. Covers the three key elements of success in consulting: organizing, financing, and marketing. Topics include: identifying potential clients, advertising, sales and presentations, pricing your services, closing a sale, translating your expertise into advice, writing successful proposals, and estimating time required to complete a project.

Sun: 10:00 am-6:00 pm—1 day—5/31/98

Tuition: \$95.00

*Starting Your Own Mail Order Business

[00.005-011]

Instructor: Mel Epstein

Learn the basics of succeeding in the mail order business by following the five key steps: developing your mail order concept, selecting merchandise, preparing an ad or catalog, renting mailing lists, and monitoring results. Includes a Harvard Business School Case Study, and a video of L.L. Bean's methods for managing a mail order business. Learn how to begin with a classified ad, how to estimate your response rate, and how to use a financial feasibility formula for a mail-order venture. (HBS)
Sat: 10:00 am-6:00 pm—1 day—5/30/98
Tuition: \$95.00

New! *Guerrilla Marketing & Modern Marketing: Blending the Best of Both

[00.037-011]

Instructor: Mel Epstein

For everyone who wants to learn how to blend Guerrilla Marketing and Modern Marketing to achieve maximum results. Guerrilla Marketing uses the metaphor of the guerrilla warrior who has fewer resources than his opponent. The Guerrilla is able to succeed through intimate knowledge of the terrain, surprise, the unconventional, timing, and precision. On the other hand, Modern Marketing stresses defining the needs of the target market customer, the 4 Ps: Product, Price, Promotion & Placement; product lifecycle, market research and positioning. This seminar includes a Harvard Business School Case Study and examples using techniques from both types of marketing strategies. (HBS)
Sat: 10:00 am-6:00 pm—1 day—6/6/98
Tuition \$95.00

*Starting and Succeeding in the Catering and Restaurant Business

[00.008-011]

Instructor: Mel Epstein

Opportunities abound for the catering and restaurant entrepreneur with a well-prepared business plan (more than 40% of the food dollar is consumed outside the home). This seminar covers preparing a complete business plan for a successful catering and restaurant business. It will cover defining your food service, from concept and organizing to financing and marketing. We will show you how to advertise, plan meals, analyze costs to increase profits, determine the best location, raise money and motivate your staff. Includes extensive handouts illustrating successful catering and restaurant management practices. (HBS)
Sun: 10:00 am-6:00 pm—1 day—6/7/98
Tuition: \$95.00



MANAGEMENT INSTITUTE

*Managing and Supervising for Results

[See #s Below]

Instructor: Mel Epstein

No matter what level of experience you have as a manager, there are four key elements of effective management you can employ: Planning, Organizing, Leading, and Monitoring. We will cover the three key elements of successful supervision: division of work, delegation, and coordination. Includes how to communicate effectively, monitor without meddling, transcend the paradox of systems versus spirit, use the three-step action plan to get work completed on

time, motivate and compensate. Using a series of video and Harvard Business School Case(s), we will illustrate the management and supervision methods you can use to succeed. (HBS)
Section A: Thurs: 9:00 am-5:00 pm—1 day—5/21/98—Course #: 00.017-011
Section B: Thurs: 9:00 am-5:00 pm—1 day—7/16/98—Course #: 00.017-021
Tuition: \$115.00

*Finance for Non-Financial Managers

[See #s Below]

Instructor: Mel Epstein

For people in all fields who want to understand the essentials of finance and how to use finance successfully in their work. Covers the income statement, the cash flow statement, the balance sheet, the five types of financial ratios, budgeting and break-even analysis, the time value of money, making projections, raising venture capital and preparing a business plan. Includes Harvard Business School Case Studies. (HBS)
Section A: Thurs: 9:00 am-5:00 pm—1 day—5/28/98—Course #: 00.034-011
Section B: Thurs: 9:00 am-5:00 pm—1 day—7/23/98—Course #: 00.034-021
Tuition: \$115.00

*Successful Negotiating

[See #s Below]

Instructor: Mel Epstein

This seminar will cover the five key elements of successful negotiating: preparation, options, power, information, and time. The three types of tricky tactics and how to counter them will be included. Three leading negotiating methods will be demonstrated: the Harvard Negotiating Project "Win-Win," Bob Woolf's "Friendly Persuasion," and Brian Tracy's "Negotiating Strategies & Tactics." Seminar participants are encouraged to bring practical negotiating questions. We will show you how to develop a pragmatic negotiating style that fits your personality.
Section A: Thurs: 9:00 am-5:00 pm—1 day—6/4/98—Course #: 00.019-011
Section B: Thurs: 9:00 am-5:00 pm—1 day—7/30/98—Course #: 00.019-021
Tuition: \$115.00

*Marketing for Non-Marketing Managers

[00.010-011]

Instructor: Mel Epstein

For people in all fields who want to learn the essentials of marketing and how to use marketing successfully in their work. "Marketing is Everything" in that no organization can succeed without being effective at marketing. Covers the four key elements of marketing: Product, Price, Promotion, and Placement. Includes how to do feasibility analysis for a new product and service, how to enhance your marketing imagination, and how to do financial analysis for marketing decisions. Additional topics include guerrilla marketing, virtual marketing, direct marketing, and Internet marketing. Participants will receive material from Harvard Business School Publishing. (HBS)
Thurs: 9:00 am-5:00 pm—1 day—6/18/98
Tuition: \$115.00



HEALTH PROFESSIONS INSTITUTE

The Health Professions Institute helps health professionals update their clinical skills and stay current with the industry. Participants in this workshop may receive CEU credit. For more information, call the Office of Special Programs at (978) 934-2405.

*Food-Borne Diseases

(00.577-011)

Instructor: Dr. Sandra Richardson

This course presents the common sources of food poisoning, detailing the microorganisms involved, their actions, and the symptoms produced. Emphasis is on understanding the microbiology of such organisms, how people react to them, and ways that people can protect themselves.
Wed: 7:00-10:00 pm—1 day—6/10/98
Tuition: \$50.00

PLEASE NOTE: Courses marked with an asterisk (*) are not eligible for tuition waivers for senior citizens, state employees, etc.

Continuing Education and the College of Fine Arts, Music Education Program

1998 Summer Music Program

- For K-12 music teachers and, through the Musikgarten course, for preschool teachers seeking to integrate music into Day Care curriculums.
- For teachers looking for opportunities to earn graduate credits, CEUs or PDPs (Professional Development Points for Massachusetts).

Orff Schulwerk
Level I, II, and III (Undergraduate, Graduate)
July 6-17
3 Credits

Multicultural Music Education
(Undergraduate, Graduate)
July 20-29
3 Credits

Popular Choral Techniques
(Undergraduate, Graduate)
July 20-30
3 Credits

Marching Band Techniques
(Undergraduate, Graduate)
July 30-August 7
3 Credits

A Splash of Kodaly
(Undergraduate, Graduate)
August 3-7
1 Credit

Musikgarten-Family Music
(Undergraduate, Graduate, Noncredit) 1 Credit
August 3-5

Musikgarten-Cycle of Seasons
(Undergraduate, Graduate, Noncredit) 1 Credit
August 5-7

Musikgarten-At Home in the World
(Undergraduate, Graduate, Noncredit) 1 Credit
August 3-5

Musikgarten-Around the World
(Undergraduate, Graduate, Noncredit) 1 Credit
August 5-7

Macmillan/McGraw Hill - Share the Music
(Undergraduate, Graduate, Noncredit) 1 Credit
August 18 & 19

Teaching the Piano the Suzuki Way
(Noncredit)
July 20-22

Advanced Suzuki Piano Teaching Methods
(Noncredit)
July 23-24

For more information about these courses or to receive a Music Education Brochure, please contact: Special Programs Office at (978) 934-2405 or write: Special Programs, Continuing Education, One University Avenue, University of Massachusetts Lowell, Lowell, MA 01854. Information and course descriptions are also available on our Website: <http://www.uml.edu/DCE>.

UMass Lowell Certificate Programs

TRAINING FOR HIGH DEMAND CAREERS

Accounting

All enterprises involving money, whether large or small, profit or nonprofit, need a financial reporting system and require accurate financial reporting and analysis. The Certificate Program in Accounting helps prepare students to serve as bookkeepers, financial assistants, payroll personnel, or to continue towards an academic degree in accounting.

Required Courses

67.101	Accounting Principles I
67.102	Accounting Principles II
67.203	Intermediate Accounting I
67.206	Cost Accounting
69.231	Business Finance

Electives (Choose 2)

67.204	Intermediate Accounting II
67.207	Auditing I
67.209	Federal Income Taxes I
67.280	Accounting for Not-for-Profit Institutions
92.202	Introduction to Personal Computing and Applications Software

Banking

The Certificate Program in Banking is designed primarily for entry level personnel such as tellers, customer service representatives, mid-management staff, and support staff in consumer lending and retail banking departments looking to move up the career ladder. Students interested in entering the field of banking will also benefit from the program.

Required Courses

42.224	Business Writing
67.101	Accounting Principles I
69.101	Principles of Banking
69.105	Consumer Lending
69.117	Law and Banking: Principles
69.127	Financial Planning

Computer-Assisted Manufacturing

The Certificate in Computer-Assisted Manufacturing is designed to provide engineers, technicians, managers, and those working in a manufacturing environment with an introduction to the computer as an aid to engineering and manufacturing. Coursework for the certificate includes two-dimensional CAD drafting, three-dimensional design, solid modeling, finite element analysis, and the use of the computer as an aid to machining (CAM).

Required Courses

23.200	CADrf (Computer Aided Drafting)
23.480	CADes (Computer Aided Design)
23.481	Applied CAD Design
23.419	Applied Computer Aided Manufacturing (CAM)

Electives (Choose 3)

23.101	Engineering Graphics
23.102	Engineering Design and Graphics
23.301	Manufacturing Technology Laboratory
23.305	Manufacturing Processes OR
23.306	Electronics Manufacturing Technology
23.430	Industrial Automation
23.474	Design for Manufacture

Computer Proficiency

The need for professionals with a strong computer background will continue to increase as business, government, schools, and scientific organizations seek new applications for computers and improvements to the software already in use. The Certificate in Computer Proficiency is designed to provide students with a broad-based knowledge of computers. All of the courses in this program can be applied towards the A.S. or B.S. degree in Information Systems.

Required Courses

92.202	Introduction to Personal Computing and Applications Software*
92.211	Introduction to Programming with C I OR
92.267	C Programming***

Electives (Choose 3)

90.171	Applications Software: Access
90.230	Introduction to Multimedia
91.113	Exploring the Internet
91.281	Introduction to Windows Programming with Object-Oriented Programming Tools
92.212	Introduction to Programming with C II
92.220	Visual Basic
92.263	FORTAN Programming
92.268	C++ Programming
92.269	Advanced C++
92.270	Visual C++
92.311	Introduction to the UNIX® Operating System
92.312	UNIX® Shell Programming
92.321	Discrete Structures I
92.360	Introduction to Data Structures
92.363	SPSS-X (Introduction to Data Analysis)
92.364	Problem Solving with C
92.470	Data Telecommunications
92.474	Database Concepts

*Students with spreadsheet and database experience on Macs or PCs can replace 92.202 with any of the elective courses listed above.

**Note: This is a partial list of computer elective courses. For the complete listing of 90, 91, and 92 elective courses, contact the Advising Center at (978) 934-2474.

***Students may not receive credit for both 92.211 and 92.267.

Computer Science

Many working professionals from a wide variety of academic backgrounds seek to obtain a Master's Degree in Computer Science, but do not possess an undergraduate degree in the field. This certificate program provides these potential graduate students with an opportunity to gain the necessary prerequisite coursework which will support their admission into a computer science graduate program. To earn this certificate, a student must demonstrate competency in seven knowledge areas.

CyberEd—Quality Education From Our Desktop to Yours

<http://cybered.uml.edu>

UMass Lowell's CyberEd Program brings the classroom to you. Earn a Certificate in UNIX on-line or apply appropriate courses to your current certificate or degree program. For the latest information regarding our on-line courses, visit the CyberEd Web site at: <http://cybered.uml.edu>, check out the listings in this bulletin or call (978) 934-2467. For additional on-line courses visit the UMass Dartmouth CyberEd Program at: <http://www3.umassd.edu>.

Course #	Course Name (All are 3 credit courses)	
42.221-021	Writing for Interactive Media	Requires word processing software and flowcharting software
42.224-021	Business Writing	Requires word processing software
42.226-021	Technical and Scientific Communication	Requires word processing software
62.406-021	Purchasing and Materials Management (8 weeks)	
90.239-021	Multimedia Scripting with Director's Lingo	Requires Macromedia Director
90.301-021, 022	Java Programming	
90.302-021	Java Script	
90.305-021	Introduction to Perl	
91.373-022	Dynamic HTML Development	
91.470-021	Topics on the Internet: Intellectual Property Rights and Copyright Issues	
92.220-023, 024	Visual Basic	Requires Visual Basic 5.0
92.267-026, 027	C Programming	Requires C Compiler software
92.268-024, 025	C++ Programming	Requires C Compiler Software
92.311-023, 024	Introduction to UNIX Operating Systems	
92.312-021	UNIX Shell Programming	
92.360-021	Introduction to Data Structures/C	
92.419-021	Computer Algebra with Mathematica	Requires Mathematica Software
92.510-021	Computers in the Classroom	Requires Mathematica Software

All courses are 14 weeks long except where noted. Students are responsible for fulfilling course prerequisites, see individual course listings in this bulletin and on the CyberEd Web site. To register for a UMass Lowell CyberEd course, see the registration form on page 15, or call (978) 934-2700. Be sure to provide your email address when you register.

Mechanics of a CyberEd Course

Two business days after registering for a CyberEd course, students should visit the CyberEd Web site at: <http://cybered.uml.edu> to confirm course registration, user names, and Web site address. Students must complete the confirmation process to receive course access information. This information will not be mailed to students. Students who do not receive this information prior to May 26th should first visit the CyberEd Web site and then contact CyberEd staff at (978) 934-2467 or email cybered@cs.uml.edu.

Student Requirements

Students must provide the following: a personal computer, frames capable browser (e.g., Netscape Navigator 2.02, Internet Explorer 3.01, or equivalent), a high speed modem (14.4 Kbps or better), Internet access, and communications, email and World Wide Web software (some courses may have additional software requirements). Students are responsible for providing their own Internet access.

CyberEd faculty assume students are competent in the use of Internet tools such as Web browsers, email, chat, ftp, and telnet. Numerous tutorials are available on the Internet as well as at <http://cybered.uml.edu/tutorial/>. Students are responsible for learning to use these tools before enrolling in a CyberEd course.

The Skills your Company Wants The Convenience and Affordability You Need

Earn college credits online over the Internet!
UMass Lowell offers a variety of courses online so you can take them at your own convenience from work or at home.

For more information, see the CyberEd
Web site at <http://cybered.uml.edu>



Satisfied by:

- 1) 91.250 or 91.101 Computing I and 91.102 Computing II or 92.267 C Programming and 92.360 Data Structures
- 2) Discrete Mathematics Statistics 91.500 or 92.321, 92.322 or previous background
- 3) Calculus A and 92.126 Calculus B or Calculus 92.131, 92.132
- 4) Algorithms 91.404 or previous background
- 5) Languages 91.301 or previous background
- 6) Computer Architecture 91.305 or previous background
- 7) Operating Systems 91.308 or previous background

For more information on the Computer Science Certificate Program, contact Prof. James Canning by phone at (978) 934-3620 or by email at: info@cs.uml.edu.

**Computer Engineering Technology**

This certificate program is designed to provide students with a broad-based knowledge of digital electronics, microprocessors and advanced digital technologies. The curriculum includes engineering science and design courses that provide a balanced view of hardware, software, application trade-offs, and the modeling techniques used in computer engineering. All of the courses in this certificate program can be applied towards the A.S. or the B.S. degree in Electronic Engineering Technology.

Required Courses

- | | |
|--------|-----------------------------|
| 17.347 | Logic Design B |
| 17.348 | Logic Design C & Laboratory |
| 17.353 | Digital Electronics |
| 17.383 | Microprocessors A |
| 17.384 | Microprocessors B |
| 92.267 | C Programming |
| 92.268 | C++ Programming |

**Data/Telecommunications**

Networking is a multi-billion dollar industry. The Certificate Program in Data/Telecommunications trains participants for positions as entry-level network administrators, LAN technicians, and system analysts responsible for networking functions in large or small companies. Many of the courses in this certificate program can be applied towards the A.S. or B.S. degree in Information Systems.

Required Courses

- | | |
|--------|--|
| 90.461 | Local Area Networks |
| 90.462 | TCP/IP and Network Architectures |
| 90.463 | Advanced Networking Technologies |
| 90.464 | Network Management |
| 92.267 | C Programming |
| 92.311 | Introduction to the UNIX® Operating System |

**Electro-Optics**

Advances in lasers, fiber optics and optoelectronic devices are revolutionizing communications, medicine, transportation, manufacturing and computing. This program is open to students who have, at a minimum, an associate's degree in a technical field.

Required Courses

- | | |
|--------|--------------------------------|
| 17.200 | Basic Optics and System Design |
| 17.300 | Basic Physical Optics |
| 17.479 | Electro-Optics |
| 17.480 | Electro-Optics Laboratory |

Electives (Choose 4)

- | | |
|--------|--|
| 17.376 | Electromagnetic Theory I |
| 17.415 | Advanced Topics in Optical Engineering |
| 17.447 | Fiber Optics in Telecommunications |
| 17.461 | Lasers and Laser Systems |
| 17.463 | Biomedical Electro-Optics |
| 17.464 | Industrial Electro-Optics |
| 17.465 | Infrared Optical Systems |
| 17.477 | Electromagnetic Theory II |

**Electronics Technology**

The Certificate Program in Electronics Technology is designed to provide the students with a broad-based knowledge of circuit theory and electronics, with laboratory work included to ensure that good hands-on experience is acquired along with the deep understanding of fundamental and changing technologies. All the computer courses in this certificate program can be applied towards the A.S. or B.S. degree in Electronic Engineering Technology.

Required Courses

- | | |
|--------|------------------------------|
| 17.213 | Electric Circuits |
| 17.214 | Circuits and Laboratory I |
| 17.215 | Circuits and Laboratory II |
| 17.216 | Advanced Circuits |
| 17.346 | Logic Design A |
| 17.355 | Electronics & Laboratory I |
| 17.356 | Electronics & Laboratory II |
| 17.357 | Electronics & Laboratory III |
| 17.358 | Electronics & Laboratory IV |

**Environmental Technology**

This certificate program is designed for personnel employed in safety, laboratory, physical plan, distribution, transportation, drafting, public works, or health board functions, as well as consultants. Students in the program gain knowledge relevant to air pollution control, resource recovery, analytical services, hazardous waste management, waste management, water infrastructure, instrument manufacturing, solid waste management, energy sources, asbestos abatement, and water utilities development. Many of the courses in this certificate program can be applied towards the B.S. degree in Civil Engineering Technology: Environmental Option.

Required Courses

- | | |
|--------|-------------------------------|
| 15.340 | Hazardous Waste Management |
| 15.378 | Air Quality Monitoring |
| 15.420 | Solid Waste Management |
| 86.131 | Environmental Chemistry I OR |
| 84.121 | Chemistry I |
| 86.132 | Environmental Chemistry II OR |
| 84.122 | Chemistry II |

Electives (Choose 2)

- | | |
|--------|----------------------------------|
| 15.280 | Industrial Waste Treatment |
| 15.356 | Water Treatment |
| 15.358 | Wastewater Treatment |
| 15.388 | Pumps and Compressors |
| 17.130 | Electrical Basics and Laboratory |
| 41.367 | Environmental Law and Regulation |
| 87.403 | GIS in Environmental Studies |
| | OSHA "Hazwopper" |

**Graphic Design and Digital Imaging**

This certificate program offers students interested in breaking into graphic design and electronic publishing an innovative mix of traditional design courses along with several courses in the latest publishing technologies. Courses cover traditional graphic design to digital imaging, computer graphics, designing for multimedia and the World Wide Web, print production, and more. Students in the program complete numerous design portfolio pieces geared towards the professional market.

Required Courses

- | | |
|--------|---|
| 70.291 | Introduction to Graphic Design |
| 70.240 | Fundamentals of Typography |
| 70.245 | Desktop Publishing: Layout and Production |
| 70.262 | Digital Imaging & Photography |
| 70.264 | Computer Graphics & Illustration |
| 70.391 | Advanced Graphic Design |
| 70.400 | Portfolio Production Seminar |

Electives (Choose 3)

- | | |
|--------|--|
| 70.376 | Computer Animation: 2D & 3D |
| 70.377 | Advanced Animation: After Effects |
| 70.392 | Design for Advertising |
| 70.393 | Corporate Identity Design |
| 70.394 | Point-of-Purchase Design & Packaging |
| 90.230 | Introduction to Multimedia |
| 90.231 | Graphics for Multimedia |
| 90.233 | Multimedia Authoring Software: Using Macromedia's Director |
| 90.238 | Designing Multimedia for the World Wide Web |

**Hazardous Waste Management**

The Certificate Program in Hazardous Waste Management is designed to provide environmental technicians, engineers, managers, and those working in the environmental field with an introduction to regulations and treatment technologies. Course work covers basic environmental chemistry, state and federal environmental regulations, various types of groundwater contamination and suitable technologies to abate hazardous waste contamination.

Required Courses

- | | |
|--------|----------------------------------|
| 15.280 | Industrial Waste Treatment |
| 15.340 | Hazardous Waste Management |
| 15.396 | Groundwater Resources |
| 41.367 | Environmental Law and Regulation |
| 86.131 | Environmental Chemistry I |

Enroll for Continuing Education courses and be eligible for exciting employment opportunities with the Boston Communications Group!

Continuing Education students are eligible to apply for positions with the Boston Communications Group, a technical support company and partner with UMass Lowell. Positions will pay up to \$10/hr. for 16 to 40 hours per week.

This exciting opportunity is open only to UMass Lowell students who can earn up to \$14,000 per year.

For further information refer to the BCG web site at www.bcgi.net

Electives (Choose 3)

- | | |
|--------|-----------------------------------|
| 15.388 | Pumps and Compressors |
| 15.420 | Solid Waste Management |
| 15.492 | Water/Wastewater Plant Management |
| 86.132 | Environmental Chemistry II |
| | OSHA "Hazwopper" |

**Internet Systems Administration**

With the emergence of new Internet servers and the rapid proliferation of Internet sites throughout the country, there is a need for personnel trained in the new technologies to maintain and administer these sites. Students completing the Certificate Program in Internet Systems Administration may pursue careers as Internet operators, systems administrators, system librarians, or Web masters.

Required Courses

- | | |
|--------|--|
| 91.271 | TCP/IP Programming |
| 91.371 | Internet Systems Administration |
| 91.372 | Managing Internet Information Services |
| 92.311 | Introduction to the UNIX® Operating System |

Electives (Choose 2)

- | | |
|--------|--------------------------------------|
| 91.373 | HTML Development and CGI Programming |
| 91.470 | Topics on the Internet |
| 91.471 | Internet Practicum/Internship |
| 91.472 | Security Issues on the Internet |

**Land Surveying**

Land surveyors measure distances, directions, and angles between points and elevations of points, lines, and contours on the earth's surface. They record results, verify the accuracy of data and prepare plans, maps, and reports. Surveyors who establish official boundaries must be licensed by the state in which they work. The Certificate in Land Surveying can prepare students for licensure in Massachusetts when combined with additional state requirements.

Required Courses

- | | |
|--------|---------------------------------|
| 15.123 | Surveying I |
| 15.124 | Surveying II |
| 15.262 | Legal Aspects of Land Surveying |
| 15.299 | Surveying III |
| 92.115 | College Trigonometry |

Electives (Choose 2)

- | | |
|--------|----------------------------------|
| 15.113 | CAD |
| 15.257 | Highway Elements |
| 15.264 | Fundamentals of Land Development |
| 23.101 | Engineering Graphics |
| 41.367 | Environmental Law and Regulation |
| 41.370 | Real Estate Law |
| 87.403 | GIS in Environmental Studies |

**Manufacturing Technology**

The Certificate Program in Manufacturing Technology is designed for technical personnel, supervisors, and managers involved in manufacturing technology disciplines. The program prepares students for career advancement opportunities in such areas as: senior technician, line supervisor, group leader, foreman, junior engineer, and senior analyst. Many of the courses in this program can be applied towards the B.S. degree in Mechanical Engineering Technology: Manufacturing Option.

Required Courses

- | | |
|--------|--|
| 23.200 | CADr (Computer Aided Drafting) |
| 23.305 | Manufacturing Processes |
| 23.416 | Statistical Quality Control |
| 23.419 | Applied Computer Aided Manufacturing (CAM) |

Electives (Choose 3)

- | | |
|--------|---|
| 23.262 | Engineering Data Analysis |
| 23.301 | Manufacturing Technology Laboratory |
| 23.310 | Industrial Safety |
| 23.314 | Manufacturing Productivity (Total Quality in Manufacturing) |
| 23.402 | Engineering Measurement Laboratory |
| 23.427 | Plant Layout and Materials Handling |
| 23.474 | Design for Manufacture |
| 23.480 | CADes (Computer Aided Design) |

Graphic Design & Digital Imaging Certificate

Interested in breaking into graphic design and electronic publishing?

The Certificate Program in Graphic Design & Digital Imaging offers an innovative mix of traditional design courses along with several courses in the latest publishing technologies.

For more information on the Graphic Design & Digital Imaging Certificate call (978) 934-2493 or email Amy_Yacus@uml.edu



Nutrition

This certificate program offers two distinct options: the Nutrition Science Track or the Nutrition and Health Track. These two options serve a variety of audiences: 1) students in UMass Lowell's College of Health Professions who are not eligible to obtain a minor in a related health field, 2) students with associate's degrees in science or clinical areas, 3) students in science-related bachelor's degree programs seeking employment opportunities in health-related industries and community-based programs, and 4) individuals with no previous experience who would like to use the certificate as a stepping-stone towards a formal degree in Nutrition.



Nutrition Science Track

Required Courses (select four of the five)

30.206 Human Nutrition OR
83.123 Nutrition and Disease
36.494 Directed Research in Nutrition
36.406/36.506 Biochemistry of Lipids
36.463/36.563 Nutritional Biochemistry



Nutrition and Health Track

This track is designed for students with a more general interest in nutrition and its health benefits. Students in this track must complete a total of five courses.

Required Courses

35.206 Human Nutrition OR
83.123 Nutrition and Disease
30.207 Fitness and Nutrition
30.208 Nutrition and Culture
Food Sanitation, Safety and Food-Borne Diseases

Electives

(Choose 1)
Complementary Health on the World Wide Web
Current Perspectives in Nutrition
Food and Nutrition Engineering



Paralegal Studies

In recognition of the growing need for paralegal training, and the increasingly valuable role that paralegals continue to play in both private and public legal settings, UMass Lowell offers the Certificate in Paralegal Studies. The curriculum offers a unique mix of legal theory and practical skills applications, and all of the courses in the certificate program may be applied to the B.S. degree in Criminal Justice, Paralegal Option.

Required Courses

41.103 Introduction to Paralegal Studies
41.387 Legal Research Methods
41.390 Litigation
44.301 Computer Applications for the Legal Profession

Electives

(Choose 3)
41.363 Corporate and Property Law
41.370 Real Estate Law
41.376 Family Law
41.391 Federal Taxation Law
41.392 Wills, Trusts, and Estates
44.287 Legal Writing for Paralegals
44.435 Alternative Dispute Resolution
44.497 The Paralegal Practicum/Internship



Plastics Engineering Technology

The Certificate in Plastics Engineering Technology provides professional training for students needing theoretical and technical information about plastics. Taught by UMass Lowell's staff of international experts, the courses provide students with practical instruction applicable to materials, processing, and design engineering. The program should be of particular benefit to technicians, process engineers and program development specialists.

Required Courses

27.201 Plastics Material Science I (Commodity Thermoplastics)
27.202 Plastics Material Science II (Engineering Thermoplastics)
27.217 Plastics Processing Engineering Laboratory
27.373 Plastics Mold Engineering I (Mold Design)
27.401 Processing Technology I
27.402 Processing Technology II

Electives

(Choose 3)
27.203 Plastics Material Science III (Thermosetting Resins)
27.301 Additives for Polymeric Materials
27.303 Reinforced Plastics and Composites
27.331 Injection Molding
27.376 Plastics Mold Engineering II
27.403 Physical Properties of Polymers I
27.404 Physical Properties of Polymers II
27.405 Polymer Characterization
27.406 Polymer Structures/Properties
27.407 Plastics Industry Organization
27.418 Product Design
27.425 Dynamic Mechanical Properties of Plastics I
27.426 Dynamic Mechanical Properties of Plastics II
27.440 Commercial Development of Plastics
27.451-27.458 Selected Topics I - VIII



Purchasing Management

The purchasing function is an integral part of business management. The Certificate Program in Purchasing Management teaches students new methods and techniques in questioning suppliers, finding information, calculating profit and negotiating. Courses also address the role of purchasers as partners with suppliers, agents, and members of product design teams. This certificate program has been designed in cooperation with the Purchasing Management Association of Boston.

Required Courses

60.202 Accounting/Managerial
69.271 Operations Management
69.275 Total Quality Management
69.281 Purchasing Principles

Electives

(Choose 3)
42.224 Business Writing
62.201 Marketing Principles
69.251 Personnel Management
69.282 Negotiations in Purchasing
92.202 Introduction to Personal Computing and Applications Software



Quality Assurance

The Certificate in Quality Assurance provides engineers, technicians, and people working in manufacturing with the training necessary to meet increasingly stringent customer demands and to make significant contributions to companies as they improve the design, production, inspection, packaging, and marketing of their products.

Required Courses

23.262 Engineering Data Analysis
23.314 Manufacturing Productivity (Total Quality in Manufacturing)
23.416 Statistical Quality Control
23.426 Quality Systems Certification/ISO 9000
23.450 Reliability Engineering

Electives

(Choose 2)
19.401 Occupational Health
23.305 Manufacturing Processes
23.310 Industrial Safety
23.474 Design for Manufacture



Spanish

The Certificate in Spanish offers proficiency in the Spanish language as well as exposure to the literature and culture of Latin America and Spain. It is valuable to language teachers seeking additional language certification in Spanish, as well as to engineers, consultants, business people and others for whom language proficiency and cultural information are crucial for successful business operations in Spanish-speaking countries and the United States.

Required Courses

54.234 Advanced Spanish Grammar and Syntax
54.245 Advanced Spanish Conversation OR
54.254 Topics in Conversational Spanish
54.315 Latin American Civilization and Culture

Choose 3 of 6

54.302 Introduction to Latin American Literature
54.310 Spanish Civilization and Culture
54.320 Special Topics in Spanish Studies
54.401 Selected Authors
54.409 Twentieth Century Spanish Literature
54.412 The Short Story—Latin America

Electives

(Choose 4)
54.211 Intermediate Conversational Spanish I
54.212 Intermediate Conversational Spanish II
54.221 Reading and Conversing in Spanish I
54.222 Reading and Conversing in Spanish II
54.301 Introduction to Spanish Literature
54.313 Fieldwork in the Spanish Community



Technical Writing

The Certificate Program in Technical Writing trains participants to be proficient in desktop publishing, hypertext, software documentation, microcomputer and application software, and programming languages. Taught by practicing professionals, students learn to use the most current technologies and processes. Those with strong writing skills and an aptitude for computers are encouraged to enter the program.

Required Courses

42.401 Principles of Technical Writing
42.402 Software Writing
42.403 Advanced Software Writing
92.202 Introduction to Personal Computing and Applications Software*

Electives

(Choose 2)
70.245 Desktop Publishing: Layout and Production
OR 2 Computer Electives**

*Note: Students who have previous computer experience may substitute a more advanced computer course for this computer course.

**See Continuing Education Course Catalog for computer courses with a 90. OR 92. prefix.



UNIX

The Certificate in UNIX is designed for those currently in the computer industry who want to upgrade their skills, and for those with basic computer literacy who want to enter this growing field. Students learn skills that are immediately applicable in the workplace as well as C programming, the language in which most networking software is written. Many of the courses in this certificate program may be used to satisfy requirements in the Computer Proficiency and Data/Telecommunications Certificate Programs, as well as the A.S. or B.S. degrees in Information Systems.

Required Courses

92.267 C Programming
92.360 Introduction to Data Structures
92.311 Introduction to the UNIX® Operating System
92.312 UNIX® Shell Programming

Electives

(Choose 1)
92.268 C++ Programming
92.269 Advanced C++
92.313 UNIX® Internals Overview
92.314 UNIX® System Interface Programming
92.316 UNIX® System Administration
92.318 Advanced UNIX Internals/Tuning

Note: You can now earn the UNIX Certificate on-line. See CyberEd course listings on page 17.



Wastewater Treatment

The Certificate Program in Wastewater Treatment prepares students for all levels of state certification required to manage and operate a modern wastewater treatment facility. The program is designed for individuals seeking to enter the field of wastewater treatment and for those in the field who want to upgrade their skills or achieve a higher level of state certification. Many of the courses in this certificate program can be applied towards the A.S. degree in Civil Engineering Technology: Wastewater Option.

UMass Lowell and Nypro Institute

Location: <http://www.uml.edu/DCE>

[What's New?](#) [What's Cool?](#) [Handbook](#)

Location: <http://www.nyproinstitute.com/>

[What's New?](#) [What's Cool?](#) [Handbook](#)

LOWELL

Nypro Institute

UMass Lowell and Nypro, Inc.
Announce the Plastics Technology Certificate
 An on-line plastics academic certificate program which allows students around the world to earn a credit-bearing certificate via the Internet.

The Plastics Technology Certificate consists of the following on-line courses:

• Basic Injection Molding	• Polymeric Materials, Design and Applications	• Industrial Maintenance	• Robotics, Automation, and Applications
• Introduction to Mold Design	• Hydraulics/Pneumatics	• Principles of Supervision	• Process Optimization
• Statistical Process Control		• Blueprint Reading	

For more information, please visit the Nypro Institute Web site at <http://www.nyproinstitute.com> or call (978) 365-9721, extension 684.

Required Courses

- 15.261 Wastewater Treatment Plant Operations I
- 15.263 Wastewater Operations Lab I
- 15.280 Industrial Waste Treatment
- 15.361 Wastewater Treatment Plant Operations II
- 15.363 Wastewater Treatment Lab II

Electives (Choose 2)

- 15.152 Water Biology
- 15.388 Pumps and Compressors
- 15.452 Operation and Maintenance of Wastewater Collection Systems
- 15.492 Water/Wastewater Plant Management
- 86.131 Environmental Chemistry I
- 86.132 Environmental Chemistry II



Water Treatment

The Certificate Program in Water Treatment provides the most effective way to prepare for the water treatment certification exams. Courses in the program are intended to provide students with the technical knowledge to operate and maintain physical/chemical water treatment facilities and water distribution systems. Many of the courses in this certificate program can be applied towards the A.S. degree in Civil Engineering Technology: Water Option.

Required Courses

- 15.272 Water Supply & Treatment Operations I
- 15.274 Water Works Operations Lab I
- 15.355 Water Distribution Systems
- 15.372 Water Supply and Treatment Operations II
- 86.131 Environmental Chemistry I

Electives (Choose 2)

- 15.152 Water Biology
- 15.374 Water Works Operations Lab II
- 15.388 Pumps and Compressors
- 15.492 Water/Wastewater Plant Management
- 86.132 Environmental Chemistry II



Windows Development Programming

The Certificate in Windows Development Programming provides students with a solid background in GUI programming fundamentals and an introduction to their implementation under Windows. Students who complete the program will be able to utilize basic Windows programming concepts such as multitasking, message passing, dynamic linking, and object embedding; apply standards for window layout, widget use, and I/O processing; develop Windows programs using an object-oriented tool; and write simple Windows programs using C or C++.

Required Courses

- 92.220 Visual Basic
- 91.281 Introduction to Windows Programming with Object-Oriented Programming Tools
- 91.381 Windows Programming in C and C++ Part I
- 91.382 Windows Programming in C and C++ Part II
- 91.353 Windows Programming for the Design of Interactive Systems
- 91.459 Human Factors in the Design of Interactive Systems
- 91.481 Windows Practicum/Internship



Multimedia Certificate Program

UMass Lowell Offers One of the
Largest and Most Comprehensive Programs
of Study in Multimedia Applications

- *State-of-the-art Multimedia Labs*
- *Courses available on both Mac and PC platforms*
- *Rich and diverse curriculum*

Courses available in:

Multimedia Technology
Video Production
Graphic Design
Animation
World Wide Web Design
Java Programming
Macromedia Director
Designing & Developing for CD-ROM

Join the Digital Revolution!

"Over 86,000 people are employed in the interactive media industry in Massachusetts, generating \$5.8 billion in revenues."

Source: Massachusetts Interactive Media Council Report, 1996.

For further information, see the Certificate Program
section below or call (978) 934-2495.



Multimedia Applications

The multimedia industry is booming and promises to become one of the most lucrative industries of the century. Individuals with the skills and knowledge to communicate information using the new technology will flourish in this emerging industry. The Multimedia Certificate Program at UMass Lowell is one of the largest, most comprehensive programs of study in multimedia available in New England. It draws upon the expertise of several departments, colleges, and centers within the University, as well as outside expertise from industry professionals.

Required Courses

- 90.230 Introduction to Multimedia
- 90.231 Graphics for Multimedia
- 90.232 Desktop Video Production
- 90.233 Multimedia Authoring Software: Using Macromedia's Director
- 90.234 Designing and Developing Interactive Media

Electives (Choose 2)

- 42.221 Writing for Multimedia
- 70.262 Digital Imaging & Photography
- 70.264 Computer Graphics & Illustration
- 70.291 Introduction to Graphic Design
- 70.376 Computer Animation: 2D & 3D
- 70.377 Advanced Animation: After Effects
- 90.236 Instructional Design for Multimedia
- 90.237 Topics in Multimedia
- 90.238 Designing Multimedia for the World Wide Web
- 90.239 Multimedia Scripting Using Macromedia Director's Lingo
- 90.301 JAVA Programming Fundamentals
- 90.305 Introduction to Perl with Applications to CGI Programming
- 91.113 Exploring the Internet

